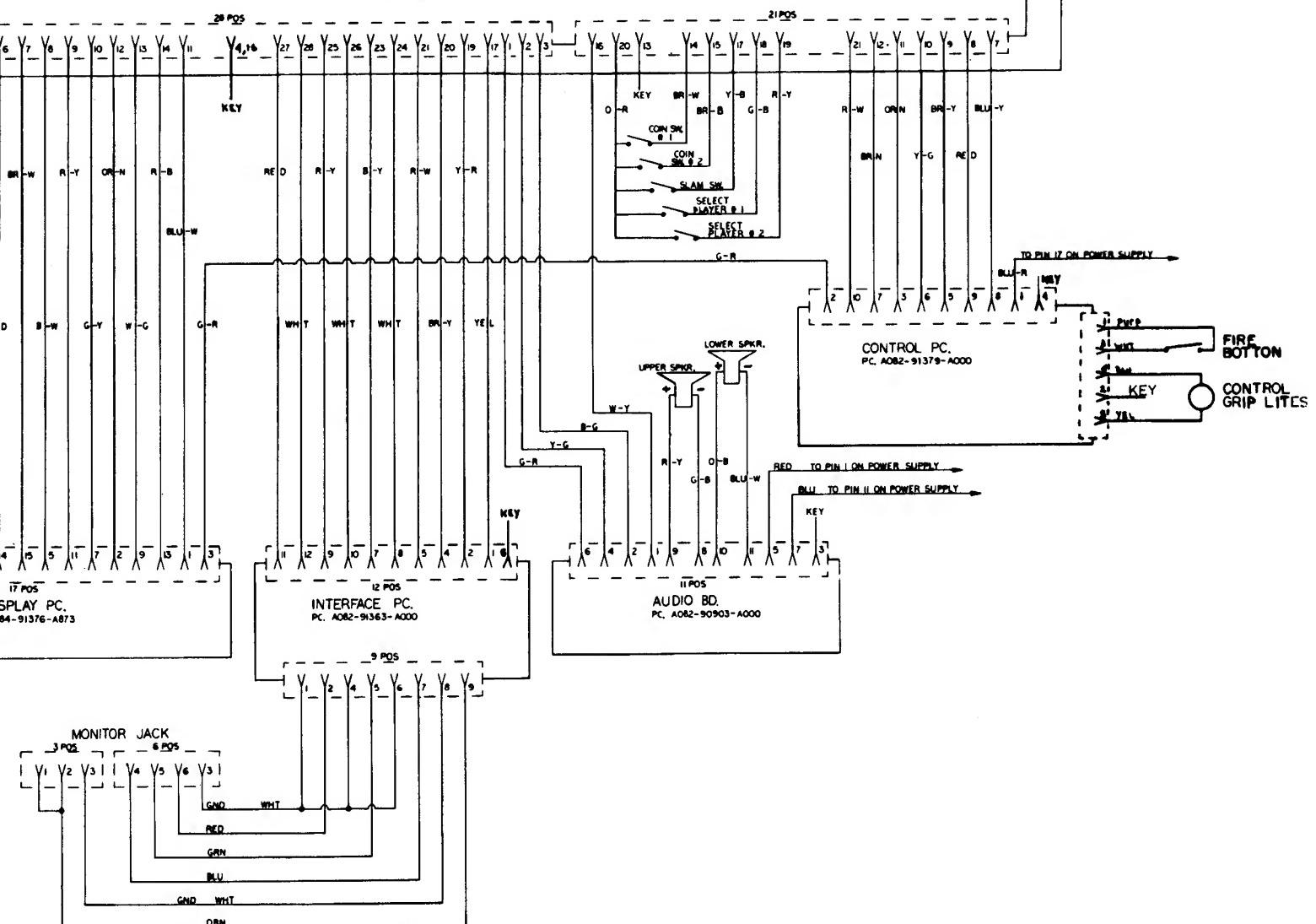


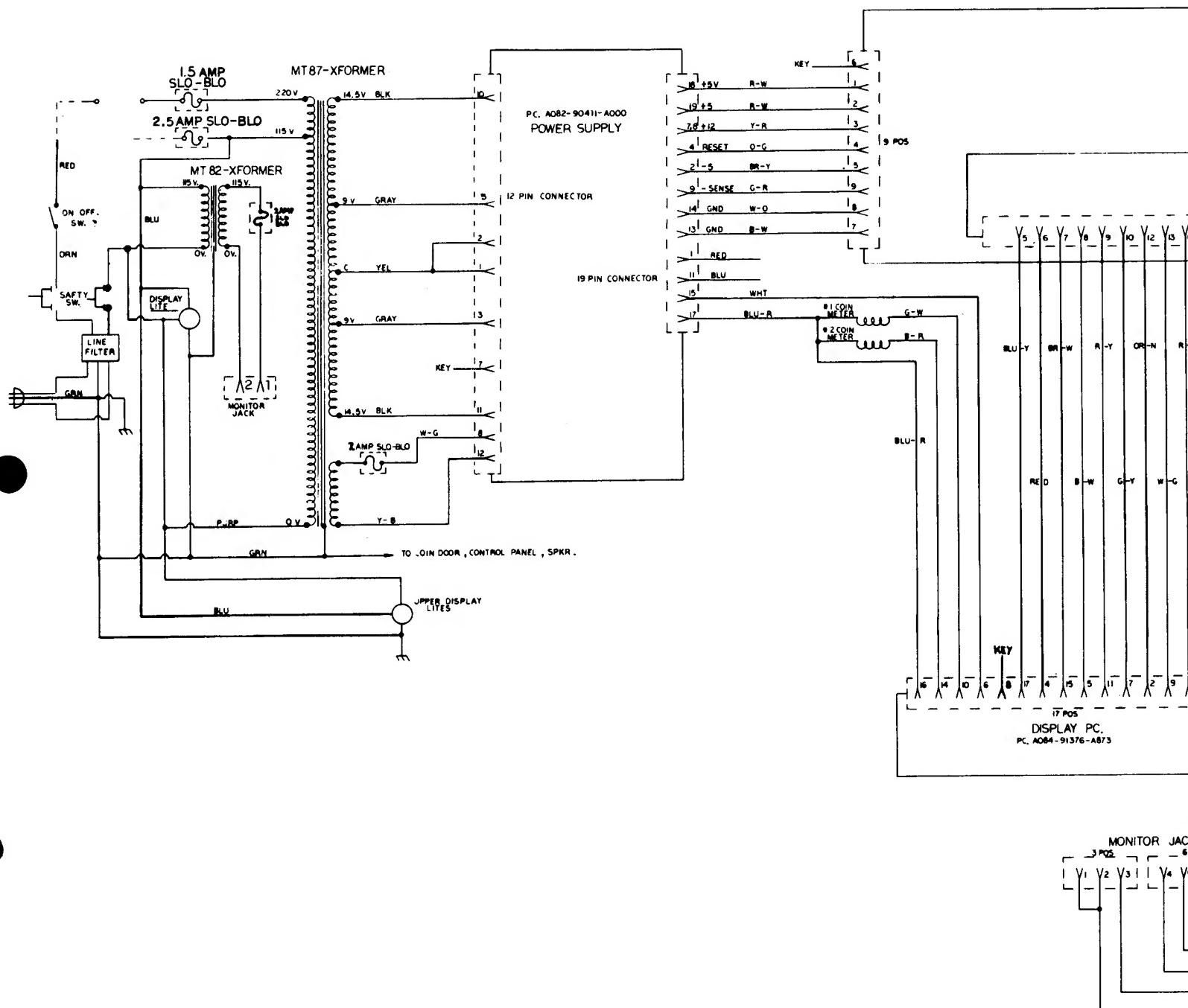
GORF U.R.  
MIDWAY MFG. CO.  
10750 W. GRAND AVE.  
FRANKLIN PARK, IL. 60131

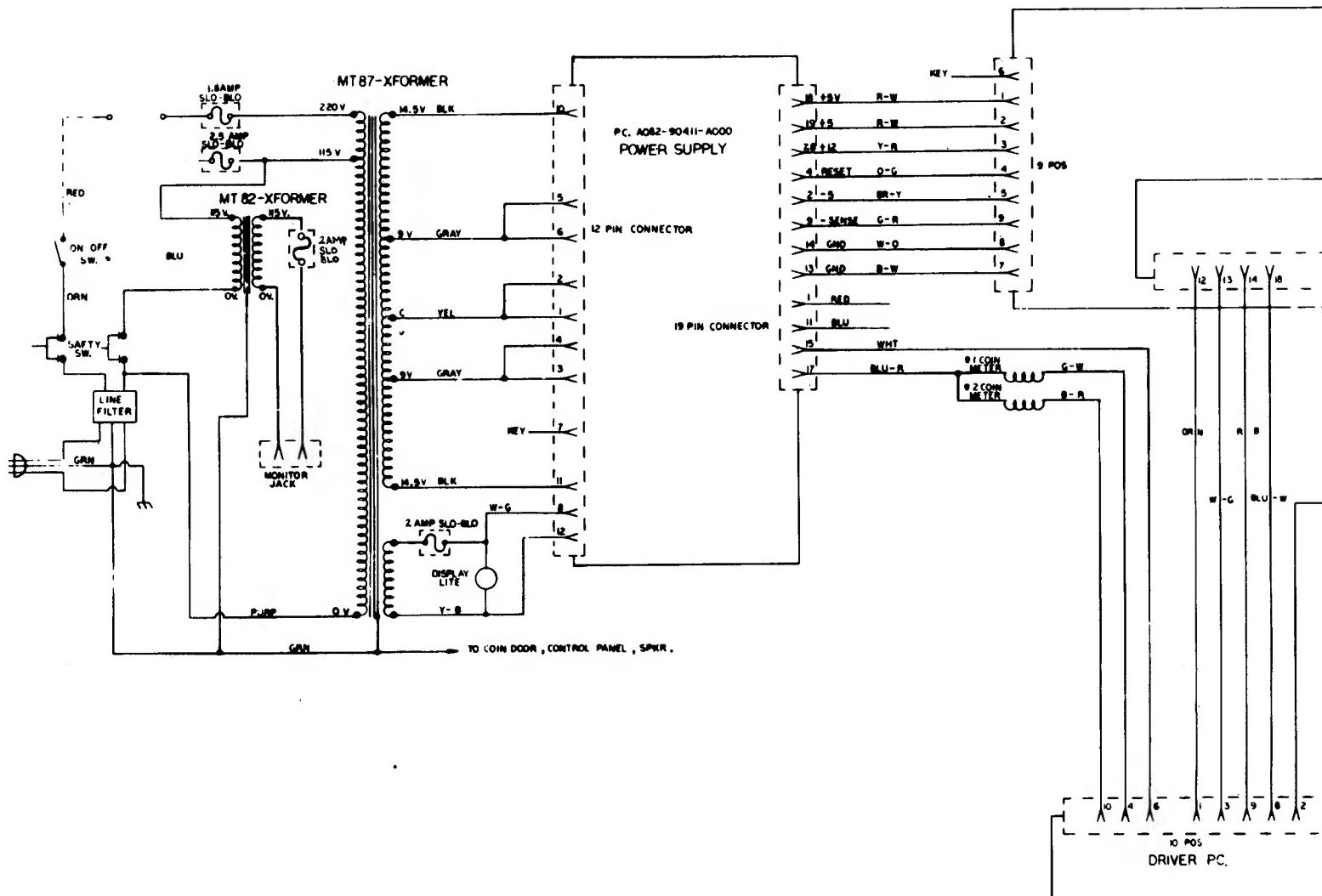
WIRING SCHEMATIC # M051-00873-A037

BACK PANEL BD.  
PC. A082-93006-B/C 000

GAME LOGIC BD.  
PC. A084-90706-A073





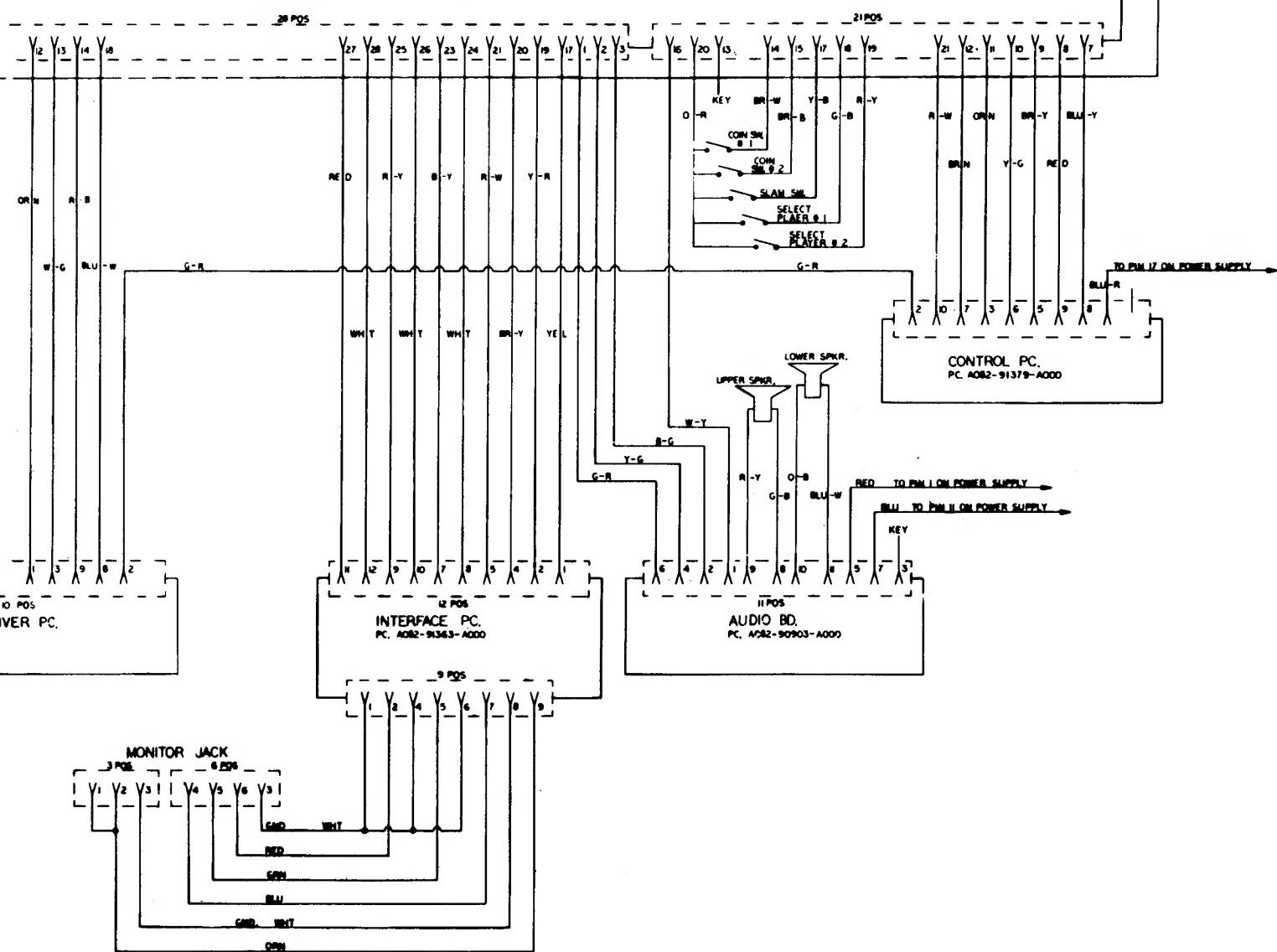


GORF MINI  
MIDWAY MFG. CO.  
10750 W. GRAND AVE.  
FRANKLIN PARK, IL. 60131

WIRING SCHEMATIC # M051-00926-A025

BACK PANEL BD.  
PC. A082-93006-A000

GAME LOGIC BD.  
PC. A084-90708-A073

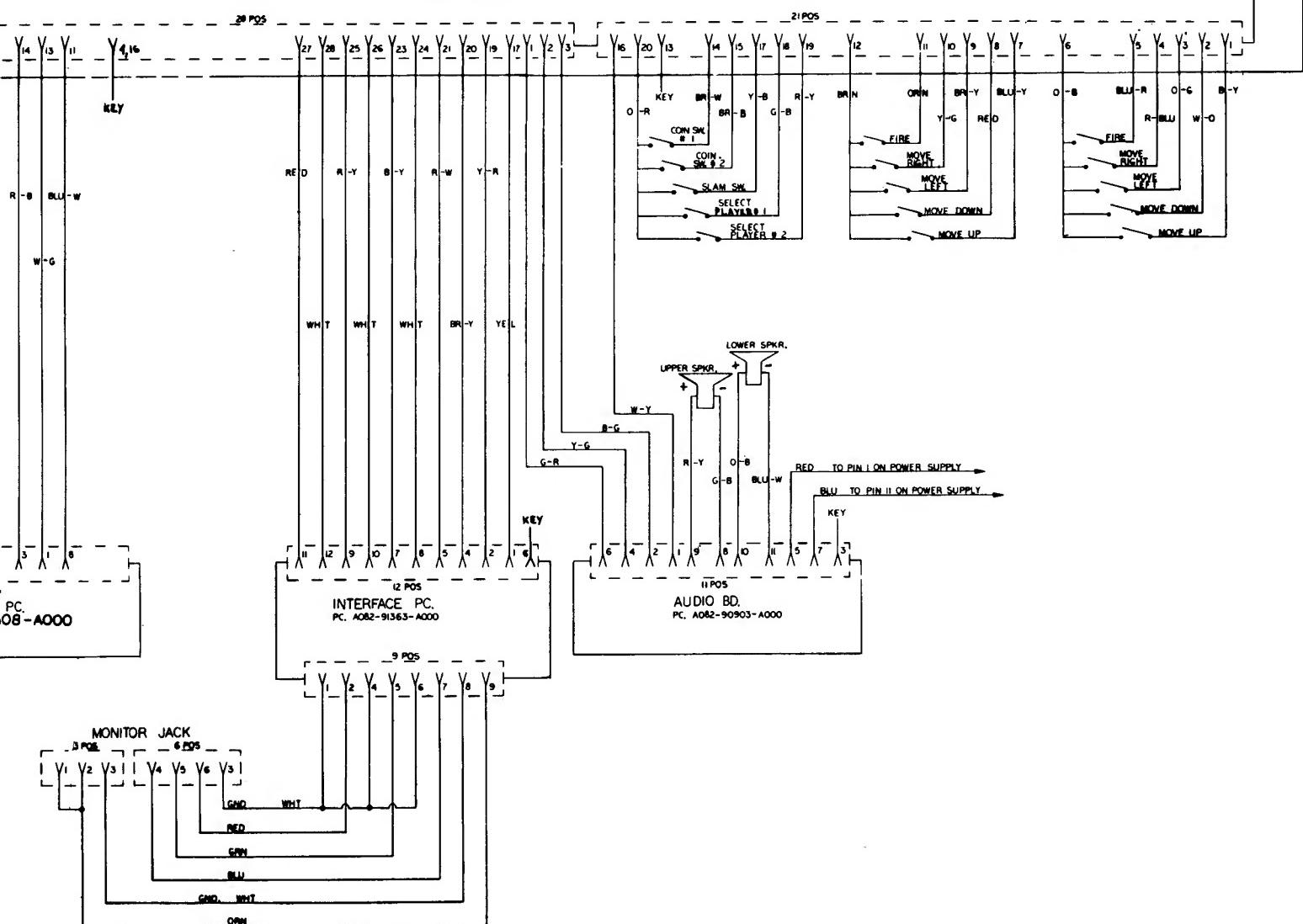


GORF C.T.  
MIDWAY MFG. CO.  
10750 W. GRAND AVE.  
FRANKLIN PARK, IL. 60131

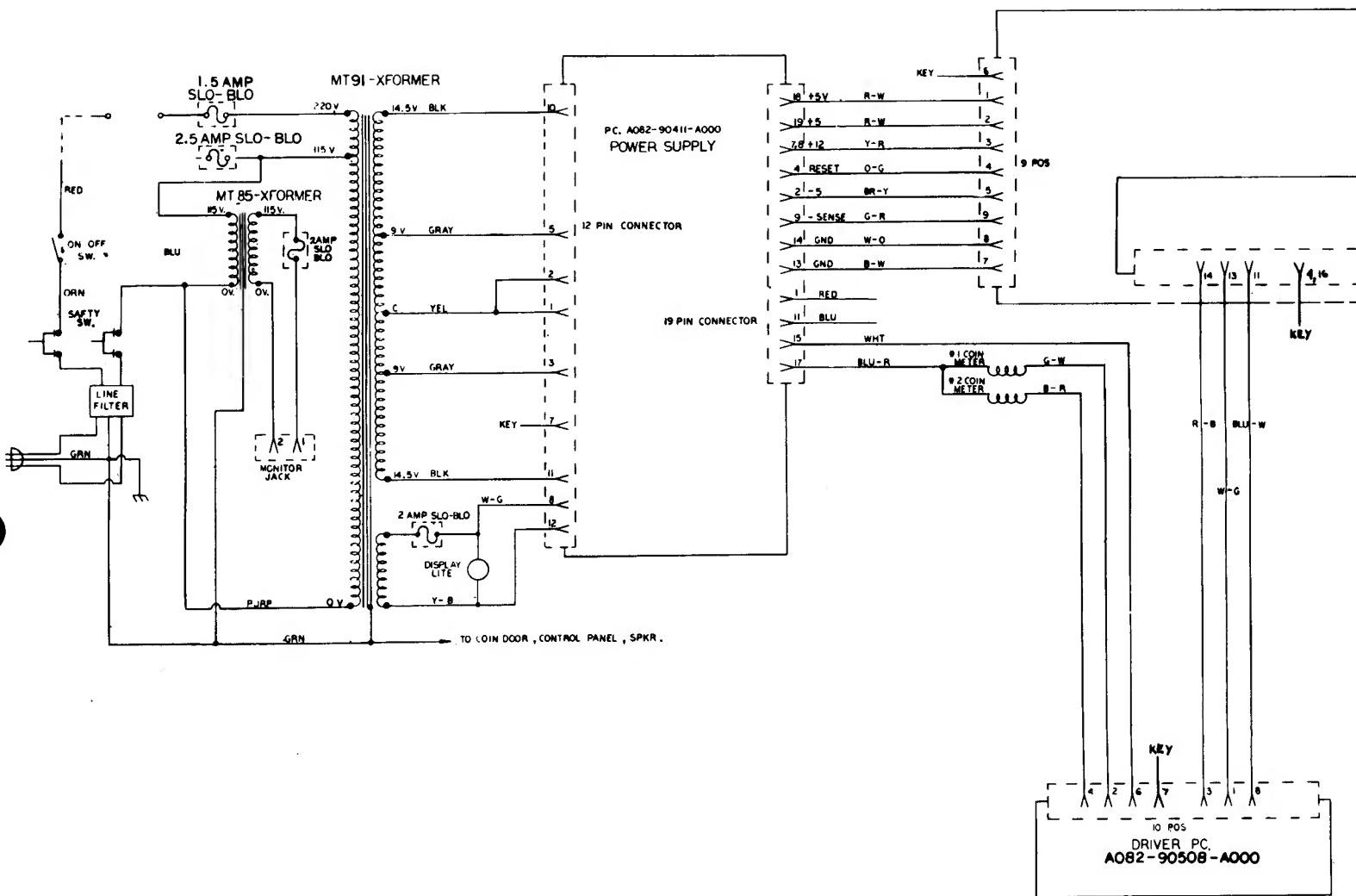
WIRING SCHEMATIC # MC51-00927-A023

BACK PANEL BD.  
PC. A082-93006-B/C 000

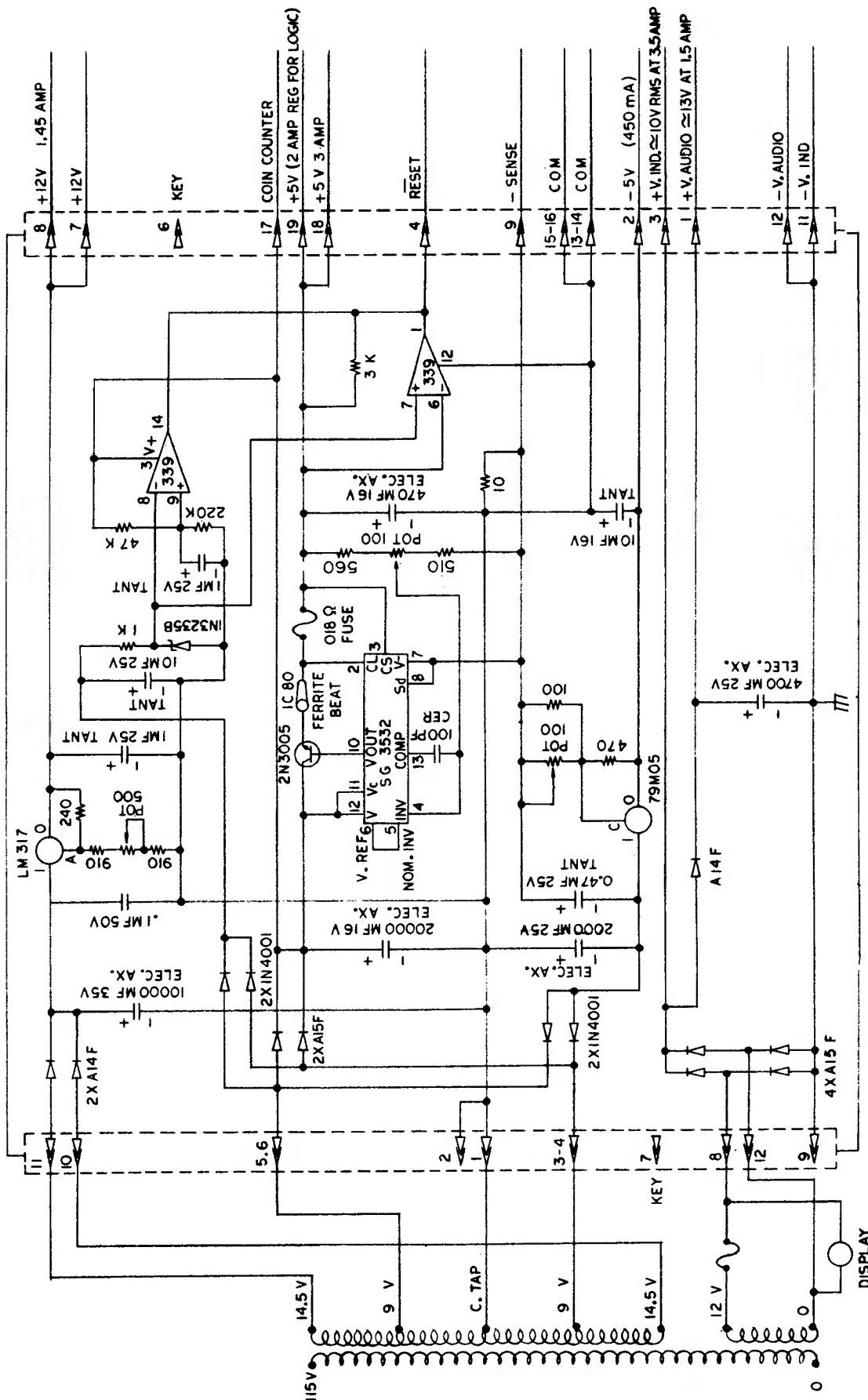
GAME LOGIC BD.  
PC. A084-90708-A873



## WIRING SCHEMATIC





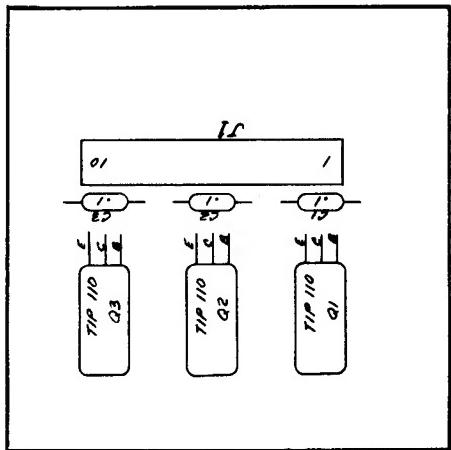


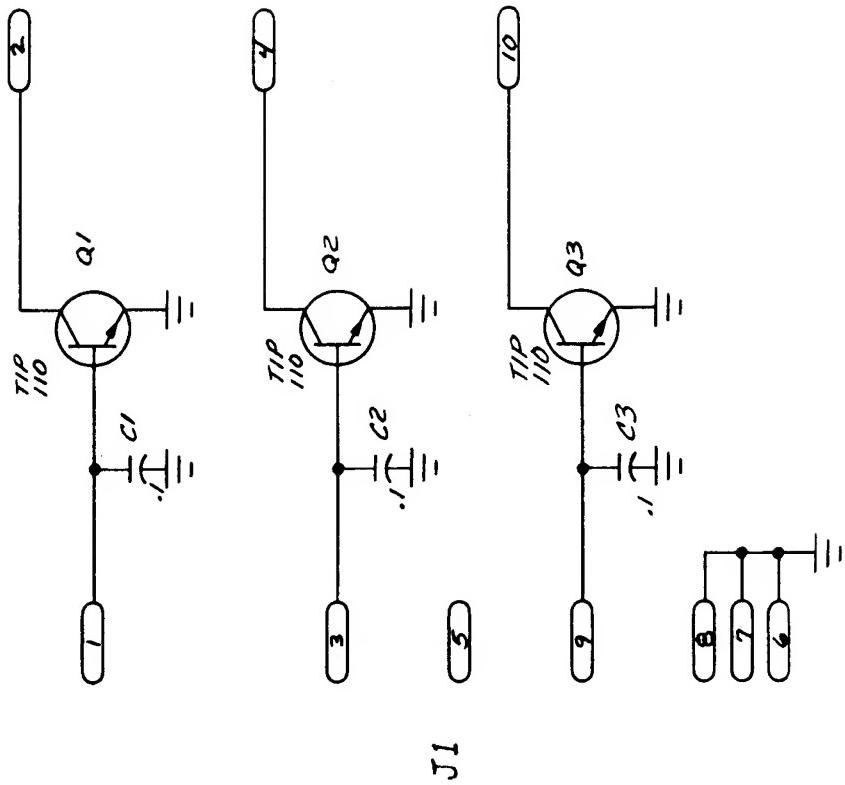
DRAWING NO. M051-00789-A011

DO NOT SCALE DWS.		PRINTED ON		NO. REQ'D	
DIM. TOLERANCES UNLESS SPECIFIED		C.L.		SCALE	
CONCENTRATION T.I.M. #03		MATERIAL		MEAT TREAT	
FRACTIONAL..... 1/16		STAINLESS		STAINLESS	
DECIMAL..... .006		C.L.D.		C.L.D.	
P.P. 7/24/80				DATE	
COMMERCIAL CARD RACK PWR SPLY SCHEMATIC					
FRANKLIN PK. ILL. PART NO. A082-90411-A000					

MO51-00826-A023

SCALE	1/16	DRAWN BY	JAT	MIDWAY MFG. CO.
DATE	9/24/00	FINISH		
MANUFACTURER		STAMP	CASE DIVISION	CO.
TRANSMITTER		EXPIRATION	MINI + CANNISTER	DATE
ATTACHMENT		INSTRUMENT	NO. 0000	NO. 0000
TEST		TEST	0000	0000
REVISION		REVISION	0000	0000
PRINTED		PRINTED	0000	0000
BY		BY	0000	0000
FOR		FOR	0000	0000
0000		0000	0000	0000





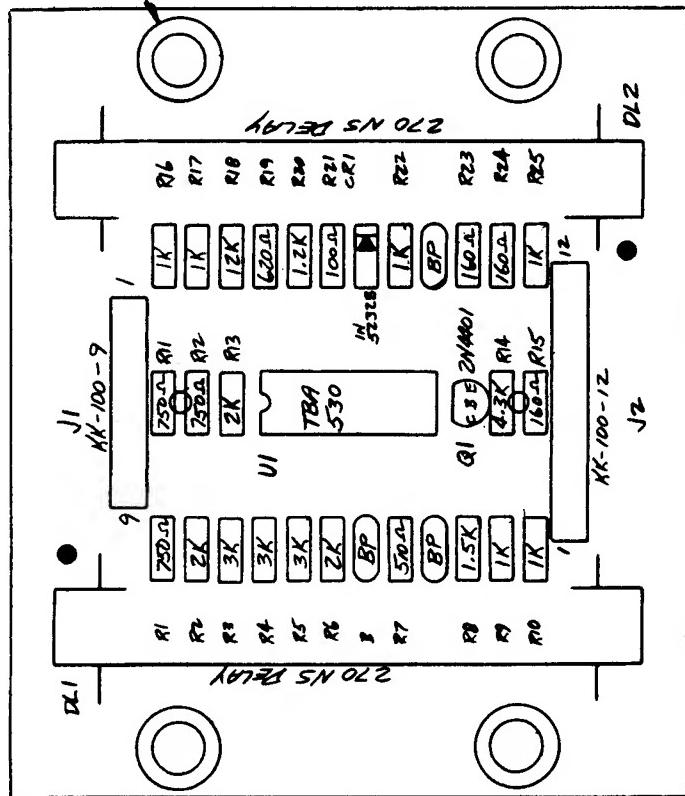
MO51-00926-A024

SCALE	DATE	DRAWN BY	MIDWAY MFG. CO.
	9-17-80	OTTO	
MATERIAL		FINISH	TITLE DRIVER BOARD
			FOR GOLF MINI & COCKTAIL
			NO A082-90508, 1000
PROD RELEASE		10-10-88	
			TOLERANCES XXX-.01 XXX-.000 ANGULAR:

PART NO.

HEYCO  
MTG. HARDWARE  
(4 PLACES)

0017-00042-0014



MO51-00873-A029

DO NOT SCALE THIS.	NO. IN CTD.	MATERIAL

MIDWAY MFG. CO.

FRANKLIN PARK, ILL. 60131

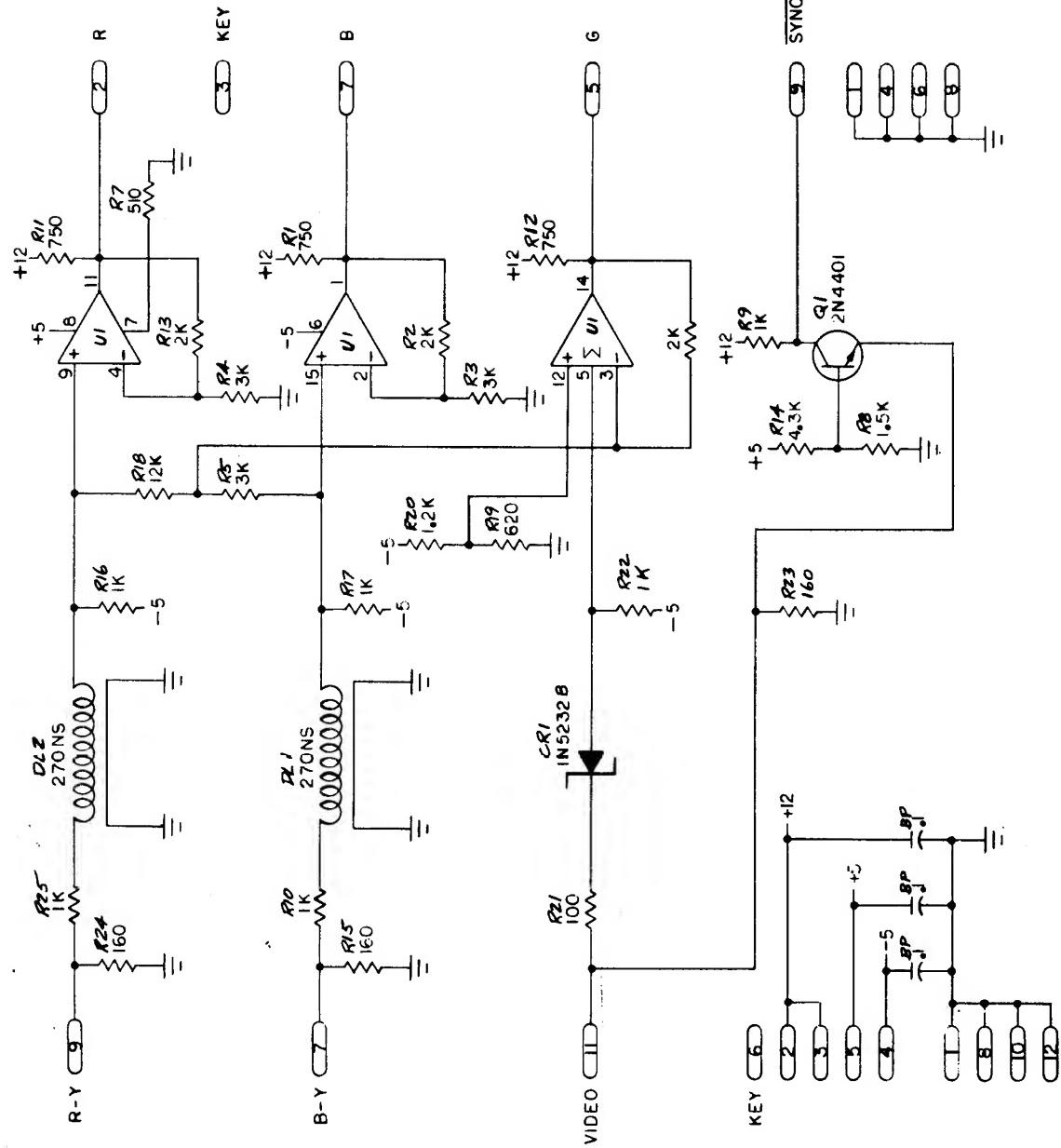
PART NO.  
A0882-91363-

REV. A000

RGB INTERFACE  
COMM. CARD RACK

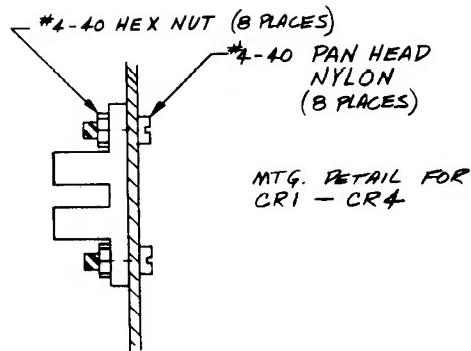
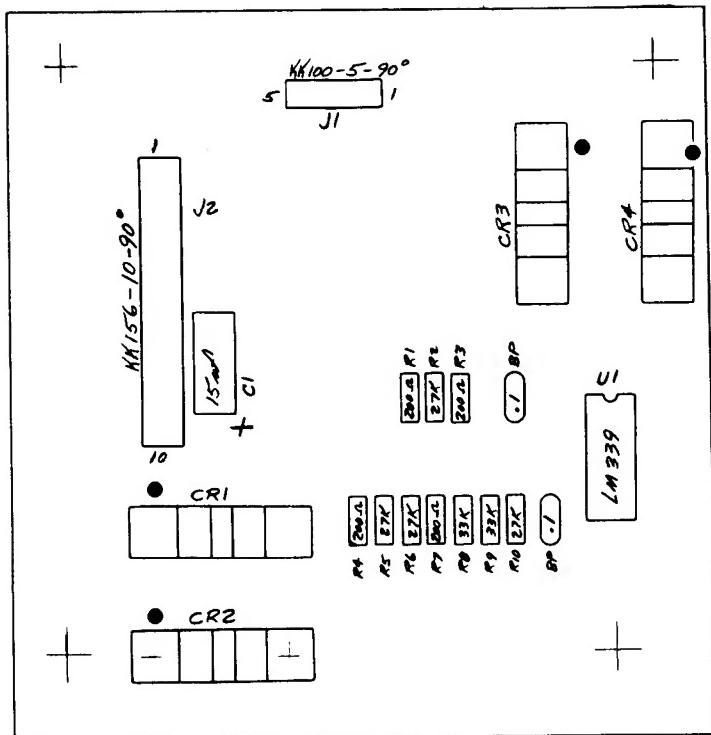
PART NO.

TBA-530



PAGE 49

MOSI-00873-A030		DRAWN BY OTTO FISCH		MIDWAY MFG. CO.	
SCALE	DATE 8-29-80	KEY	FILE NO.	TITLE RGB INTERFACE	
INCHES				FOR CRS	
MM				NO A082-9363-A000	
Revised 7/10					



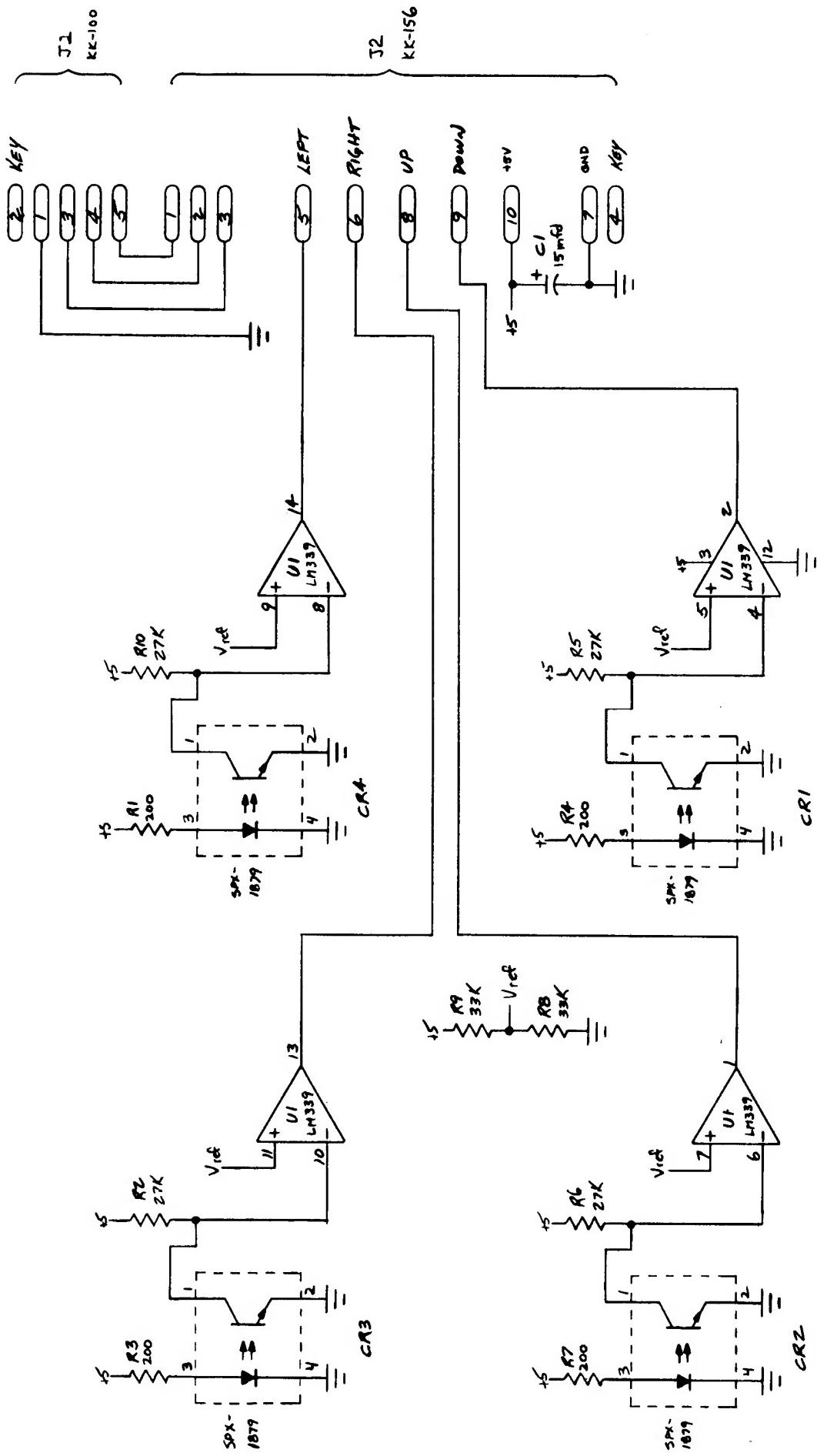
M051-00873-A027

DO NOT SCALE DWG.	HEAT TREAT.	SCALE	USED ON CCR-GOOF	MIDWAY MFG. CO.
DIM. TOLERANCES UNLESS SPECIFIED	DRW.	INCHL.	NO. REQ'D 1	FRANKLIN PK. ILL.
FRACTIONAL-----	INCHES			
DECIMAL-----	MM			
HOLE DIA.-----	+ .002-.000	DATE	CONTROL GRIP ASSY.	PART NO.

A082-91379-A000

MIDWAY MFG. CO.  
**CONTROL GRIP PC ASSY**  
**A082-91379-A000**

MOS1-000873-A025



M051-00873-A028

SCALE DATE ISSUED BY  
2.1 1974 MIDWAY MFG. CO.

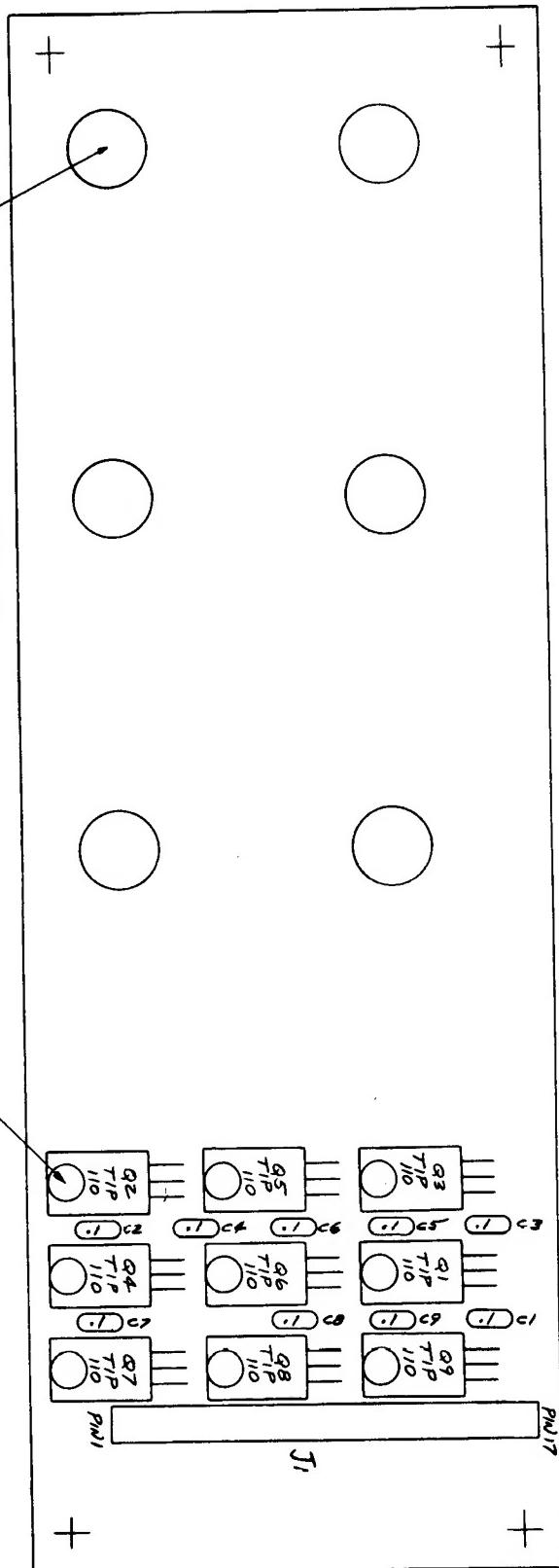
WEIGHT MATERIAL FINISH

TIME DISPLAY BOARD

FOR LAMPS & COUNT COUNTERS

PRO. PERIODS NO. A0084 - 91376-14873

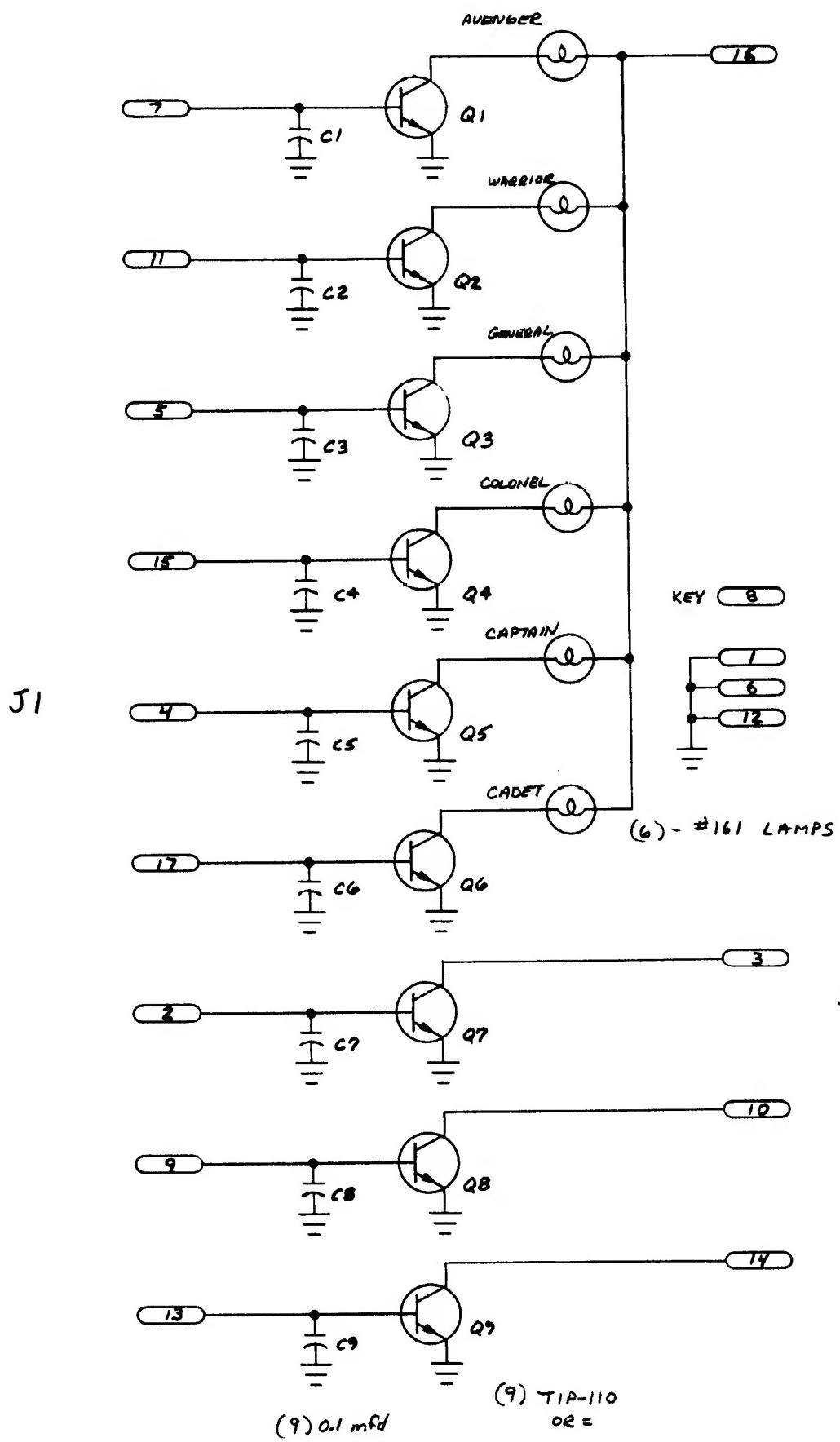
OPTIONAL MFG. HWR.  
METAL SNAP # 0017-000007-0134  
(9 PLACES)



COMPONENT SIDE VIEW

\*161 LAMP WITH  
# 0017-00031-0029 SOCKET  
(6 PLACES)

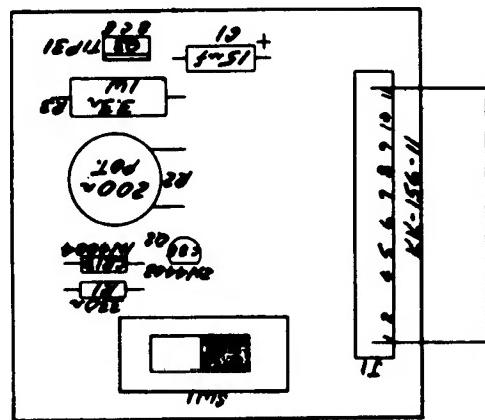
MATERIAL		FINISH	
FR4			



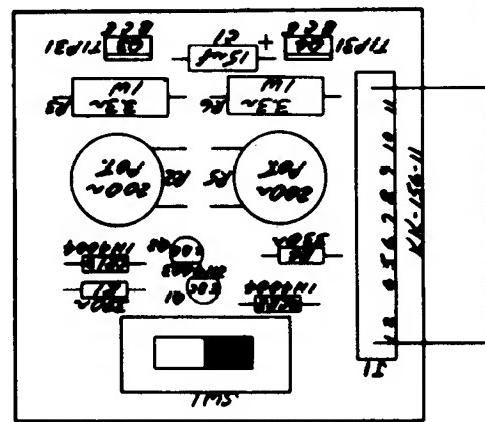
MIDWAY MFG. CO.			
SCALE	DATE	DRAWN BY	
	9-17-80	O TTO	MIDWAY MFG. CO.
MATERIAL	FINISH	TITLE	
		DISPLAY	BOARD ASSY
		FOR GOREF UPRIGHT	
		A084 - 9/376 - A873	
		TOLERANCES MM : 1:50 INCH : 1000	
		ANGULAR :	
From Releaser		10/10/81	

MO5I-00789-A013

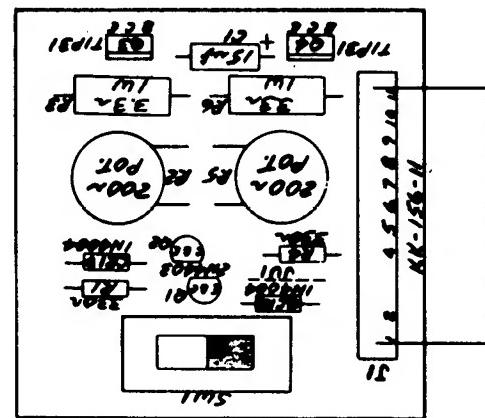
DUAL  
AUDIO AMP BOARD ASSEMBLY  
4002-30205-A002

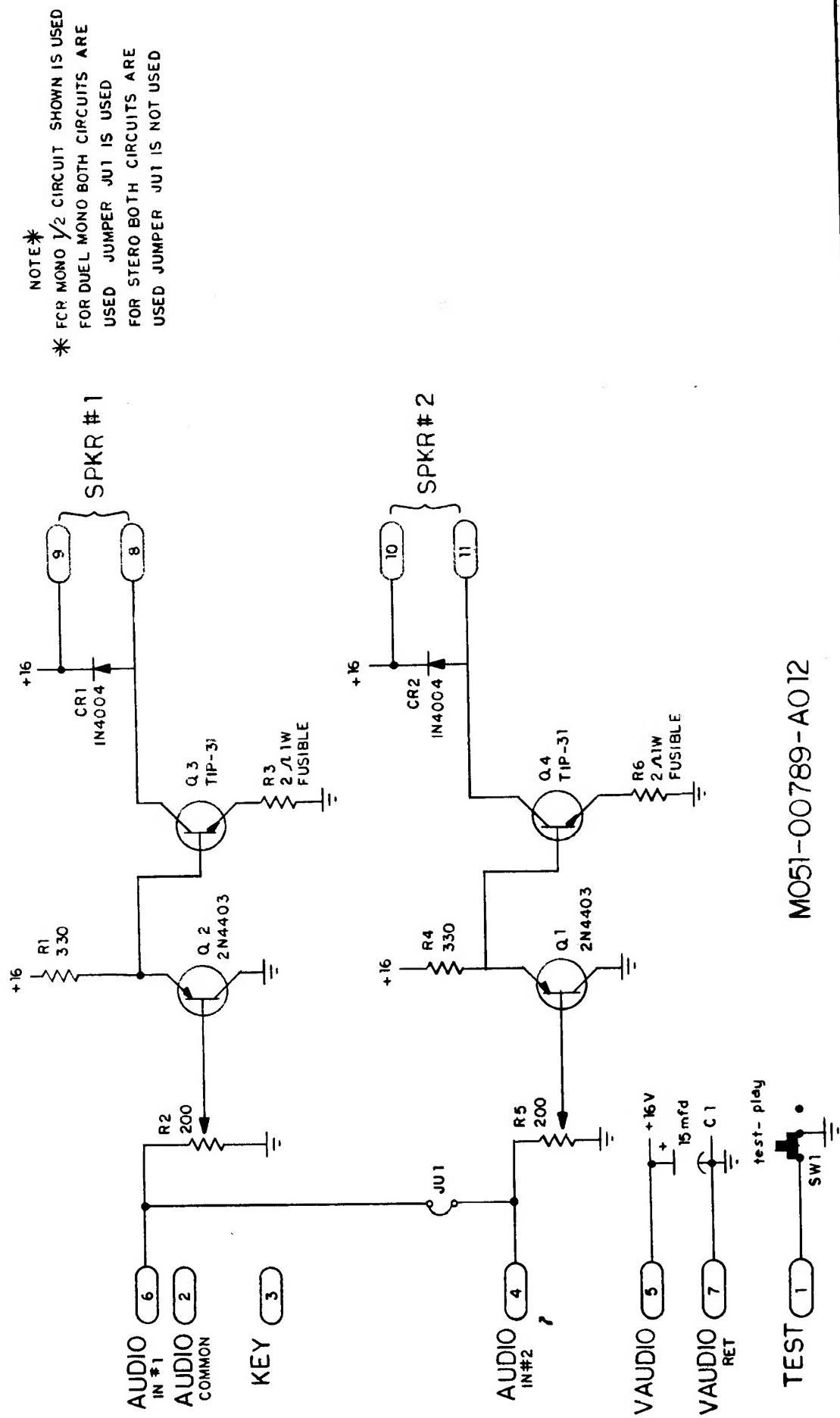


STEREO  
AUDIO AMP BOARD ASSEMBLY  
4002-30205-A002



DUAL MONO  
AUDIO AMP BOARD ASSEMBLY  
4002-30205-A002

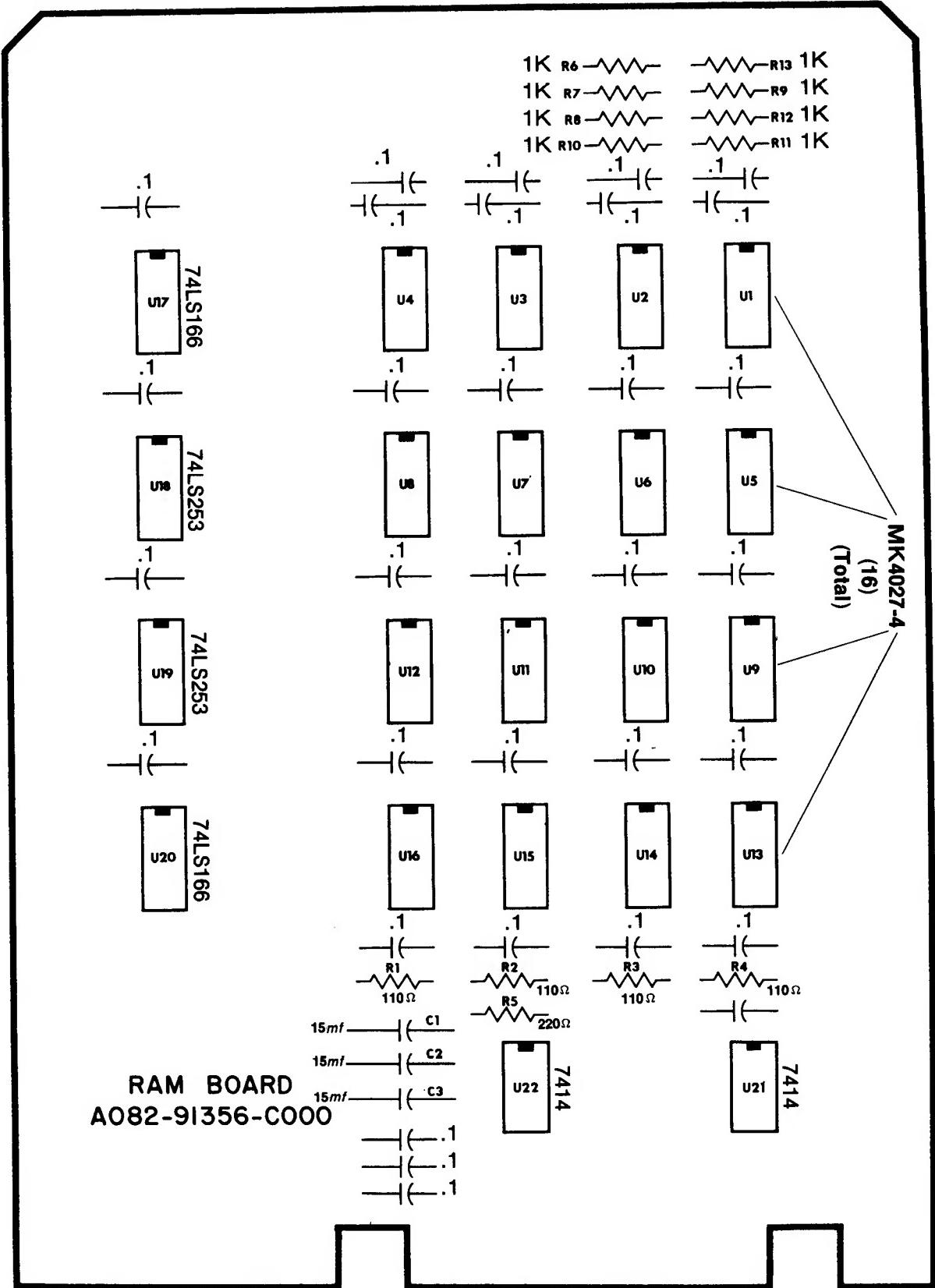


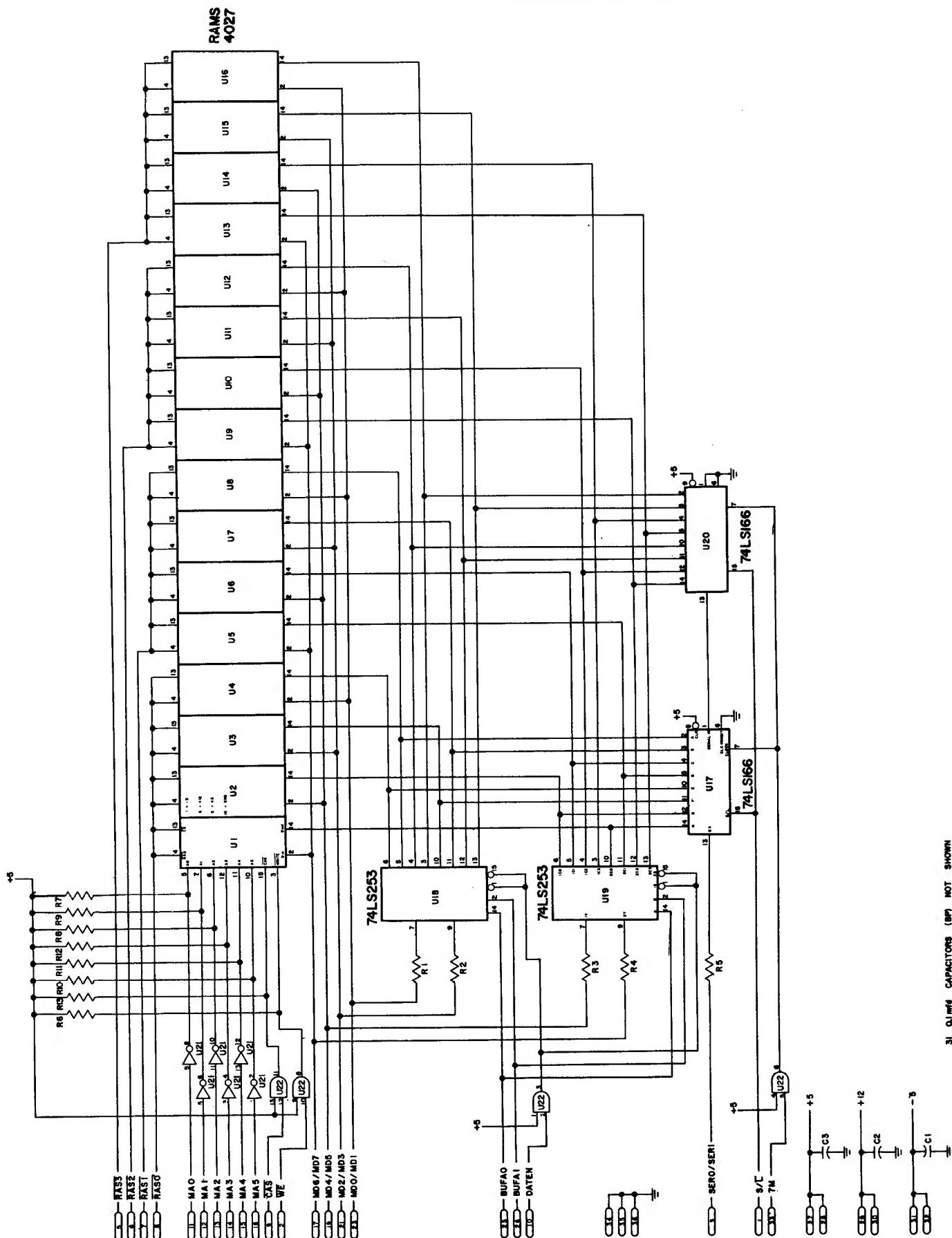


PART NO.  
A082-90903-A000

AUDIO AMP BOARD

M051-00789-A012



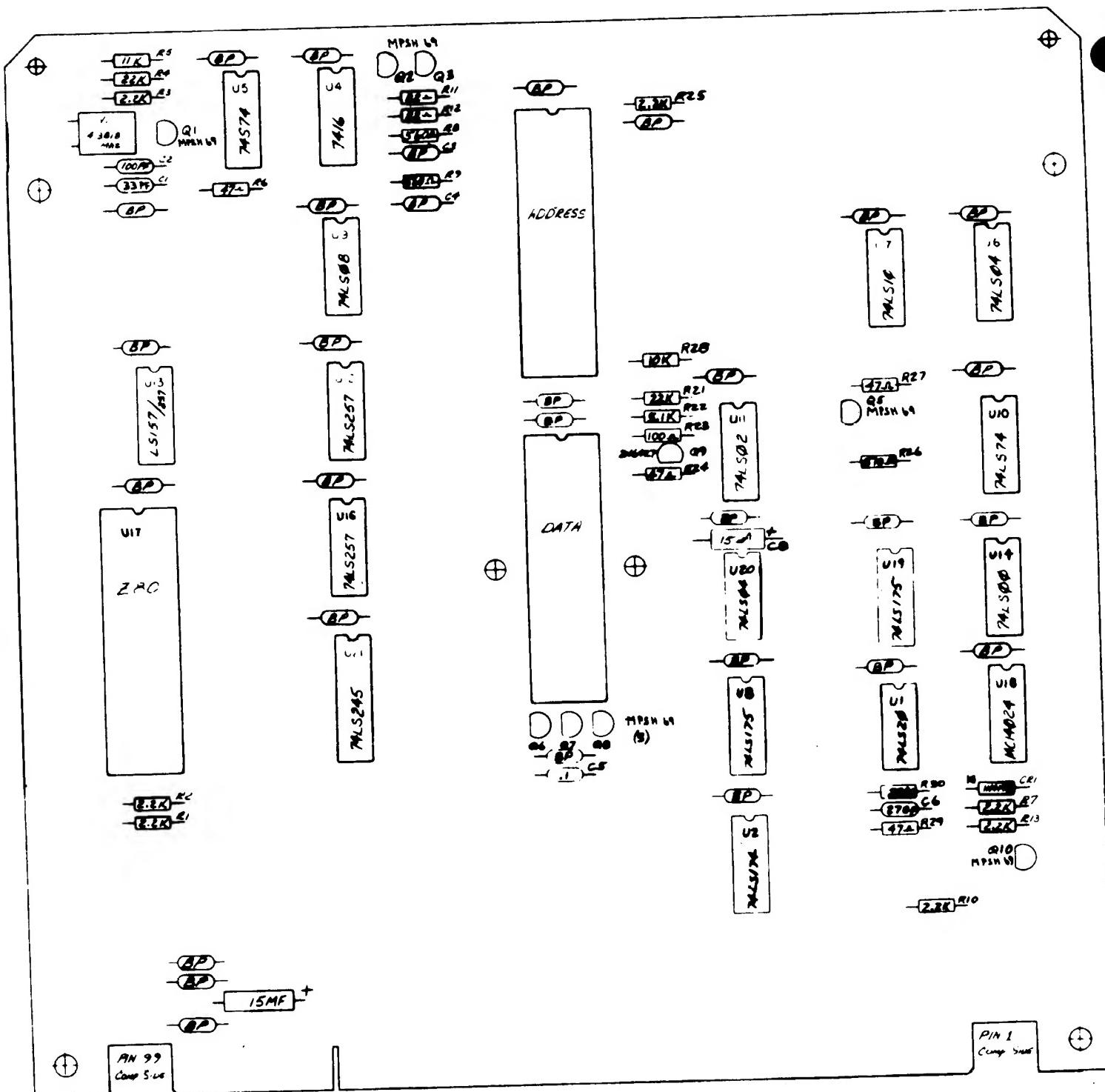


## RAM BOARD

**SCHEMATIC PART NO. M051-00789-C002**

A082-91356-C000

PAGE 57

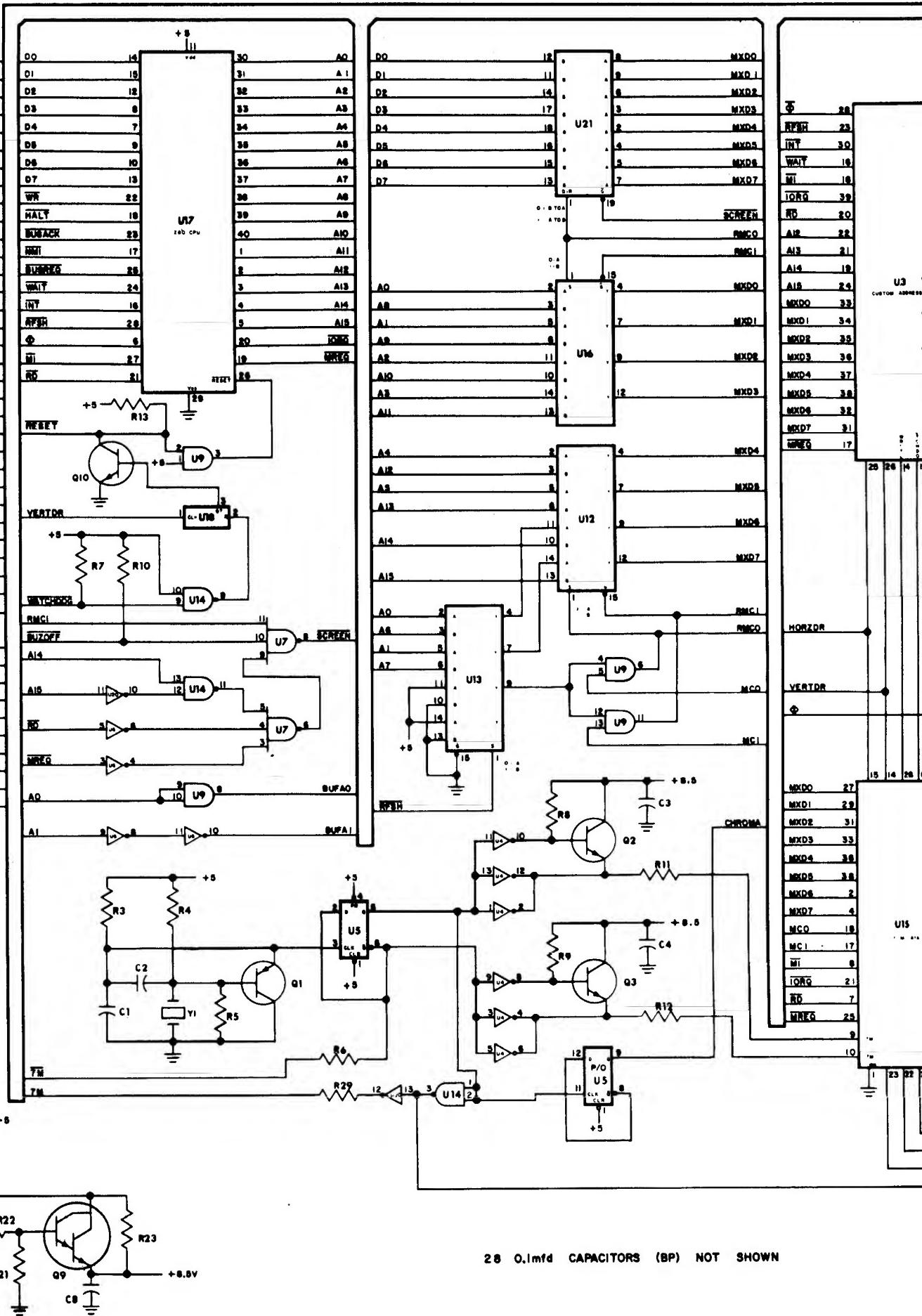


Component Side

M051-00789-F006

REF ID: A6485 3/12/00 2:1 9-79 KEE MIDWAY MFG. CO.  
C 3-12-90 CPU BOARD  
D 4-18-90 CommCard Reader  
E 7/15/00 ROBZ-91354-F-000

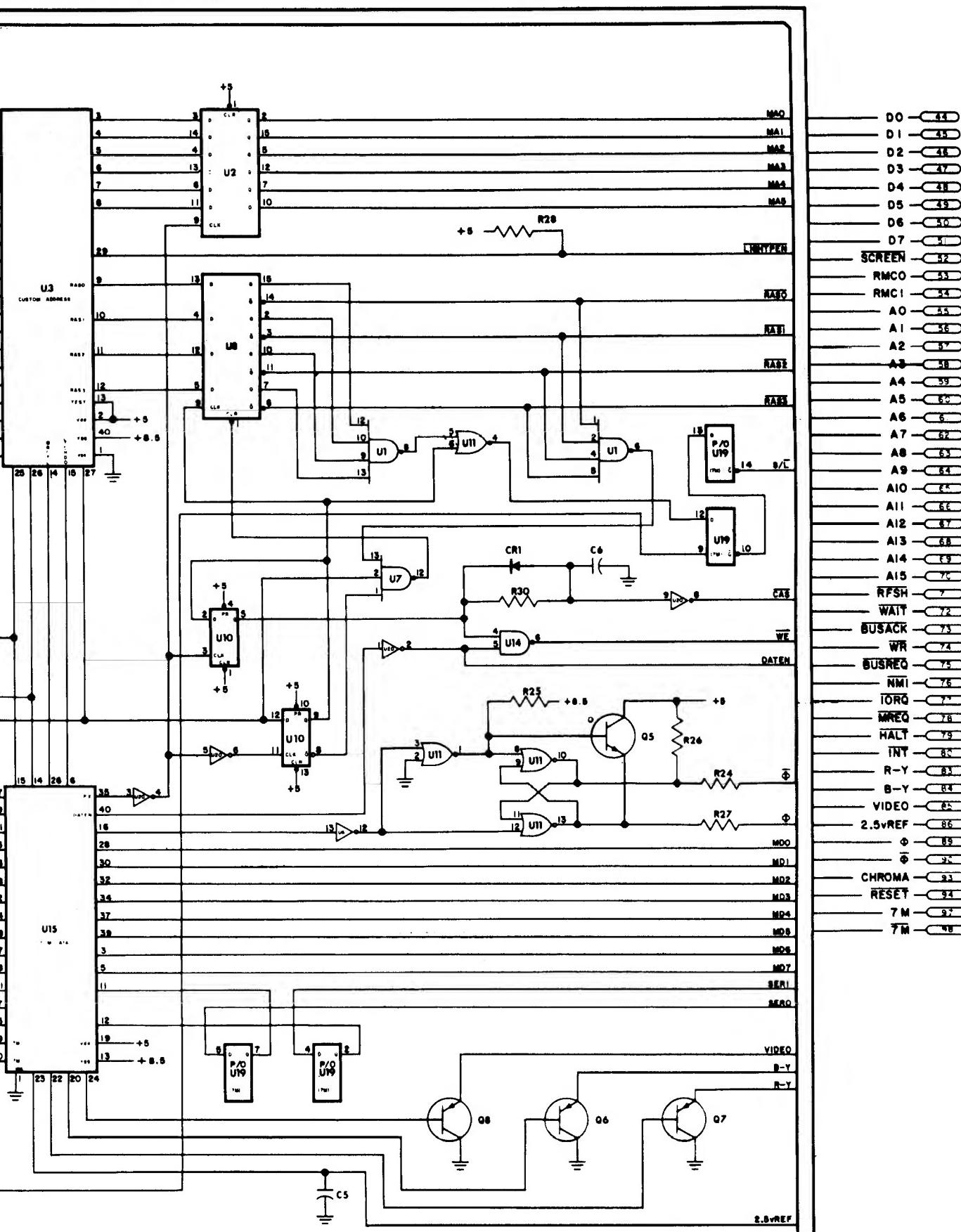
S/L
WE
SERI
SERO
RASS
RAS2
RAST
RASO
CAS
DATEN
MAO
MA1
MA2
MA3
MA4
MA5
MD7
MD6
MD5
MD4
MD3
MD2
MD1
MDO
BUFA0
BUFA1
BUZOFF
WATCHDOG
LIGHTPEN
VERTDR
HORZDR
MCO
MC1
RD
MI
MXD0
MXD1
MXD2
MXD3
MXD4
MXD5
MXD6
MXD7

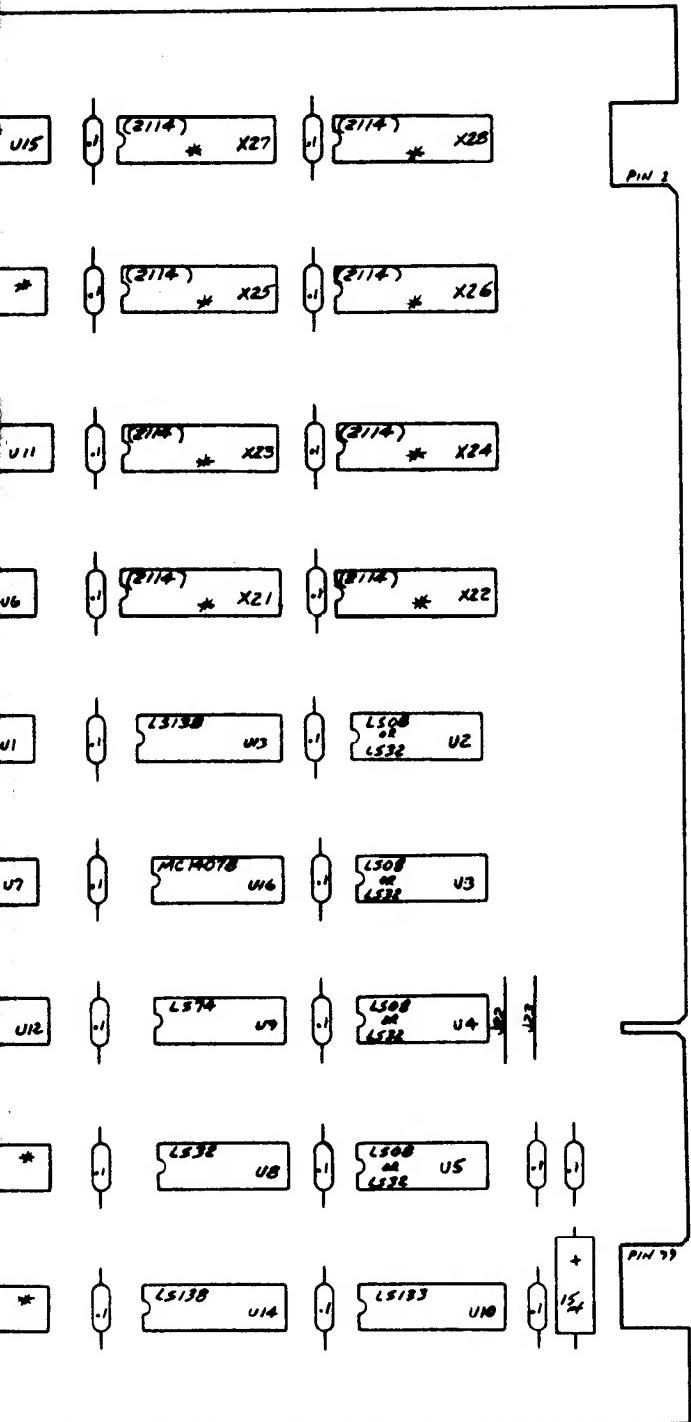


28 0.1μfd CAPACITORS (BP) NOT SHOWN

A082-91354-F005  
M051-00789-F005

CPU BOARD



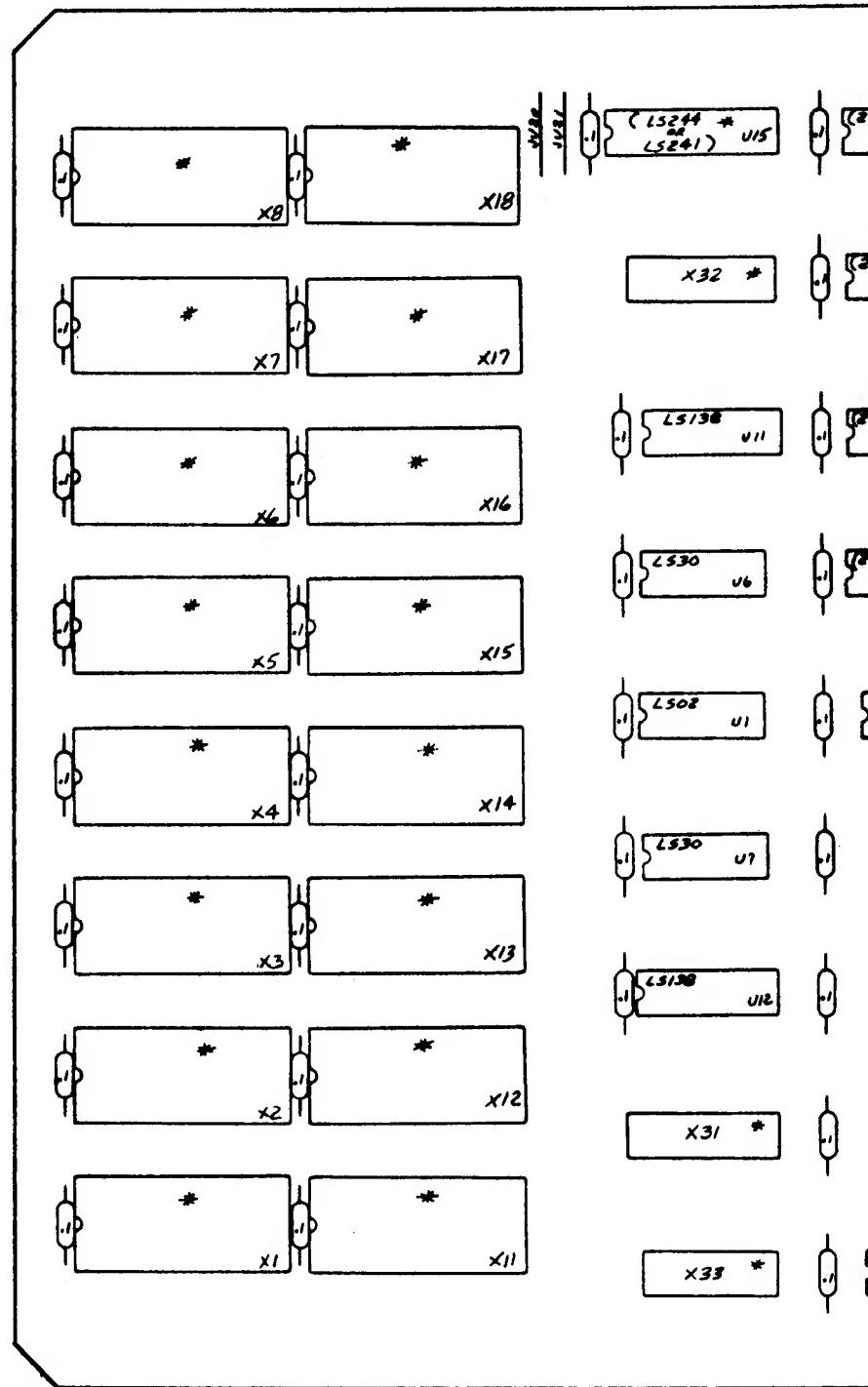


\* - DENOTES WHICH POSITION RECEIVES J.C. SOCKET.

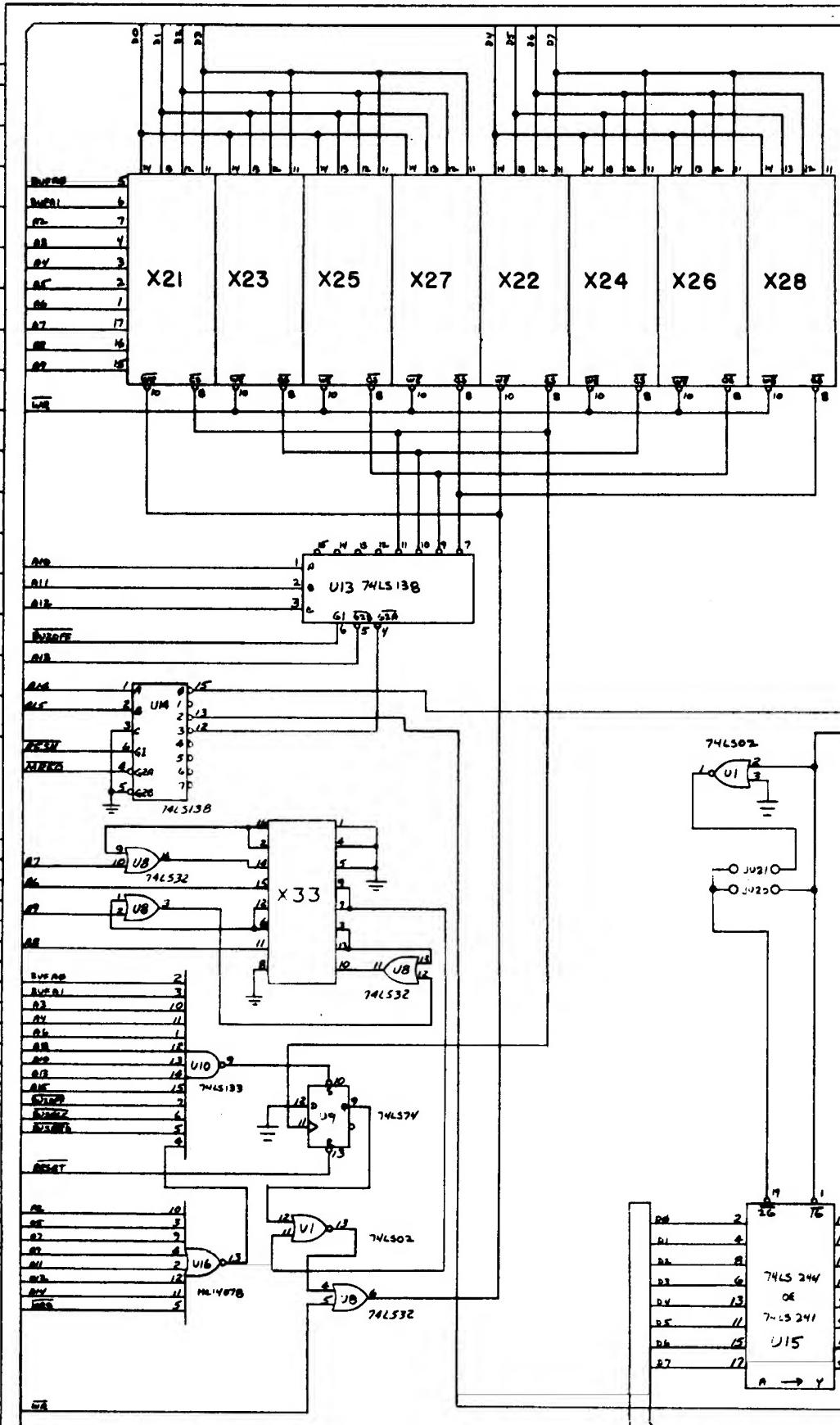
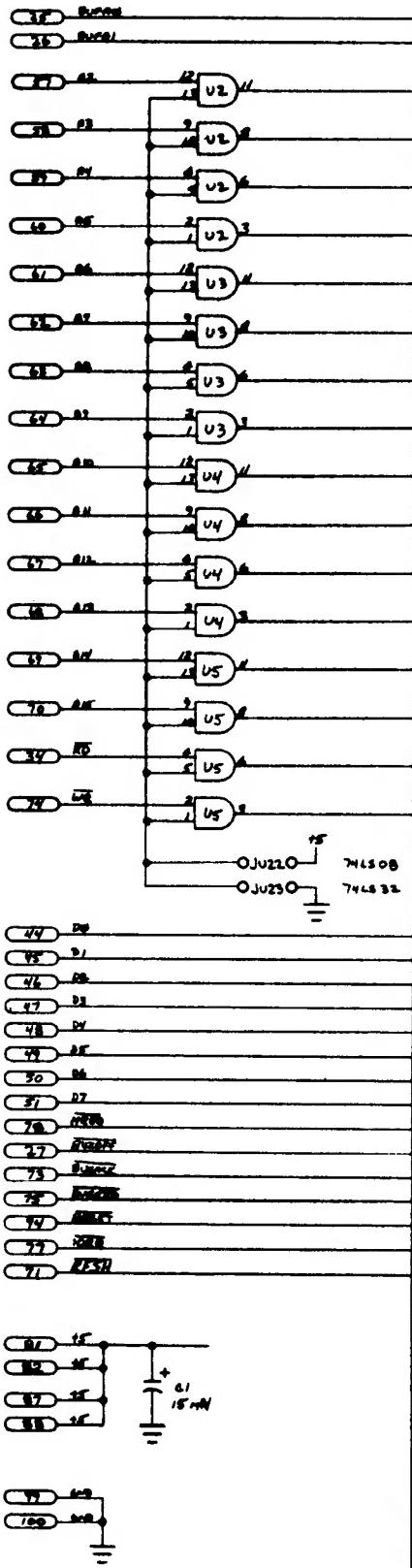
DOMESTIC

M051-00873-A032

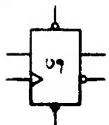
				31/13		MIDWAY MFG. CO.
				SEARCHED		SEARCHED
				SERIALIZED		SERIALIZED
				INDEXED		INDEXED
				FILED		FILED
						2003-21861-0002
						2003-21861-0002



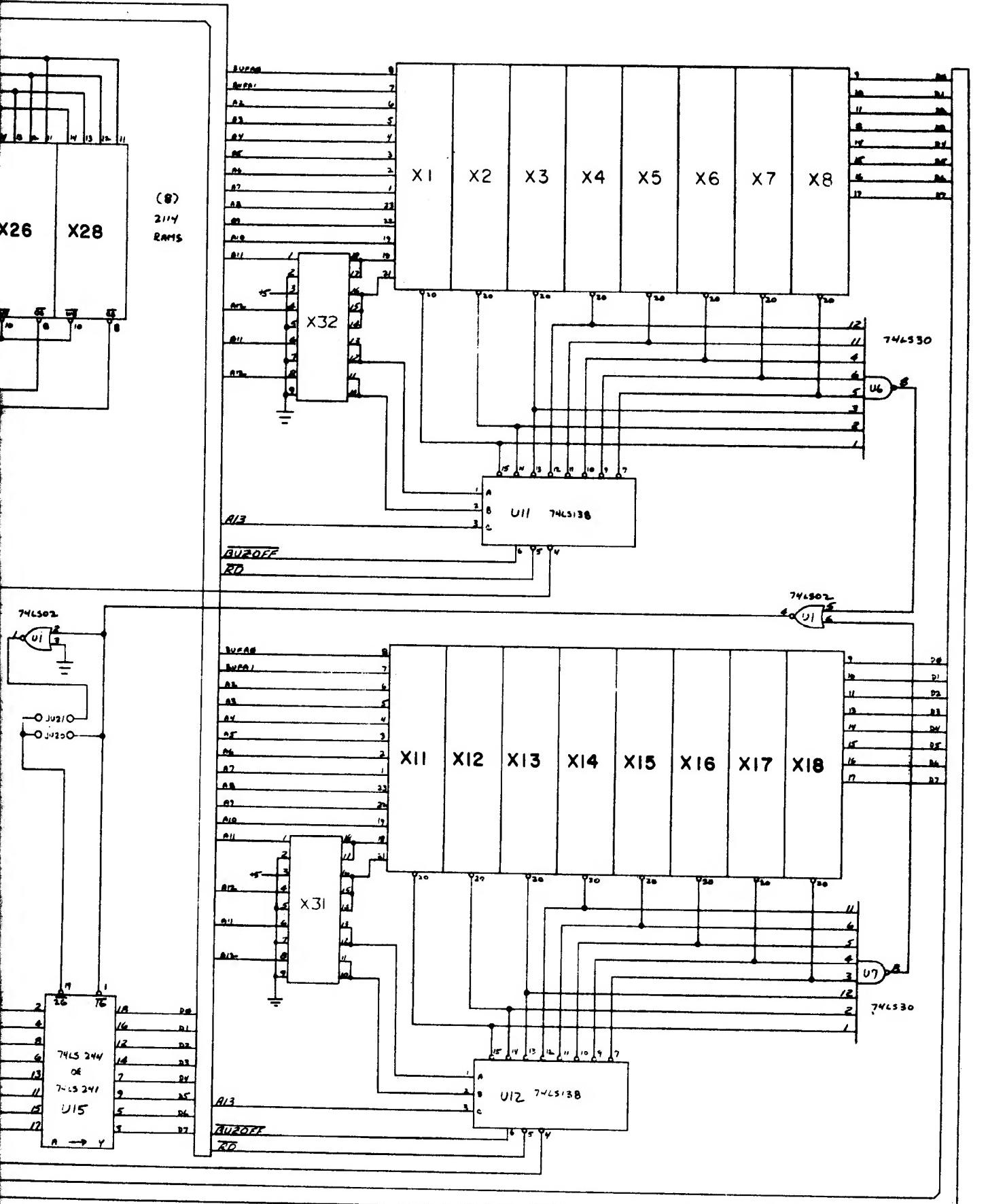
COMPONENT SIDE



NOT USED



M051-0087

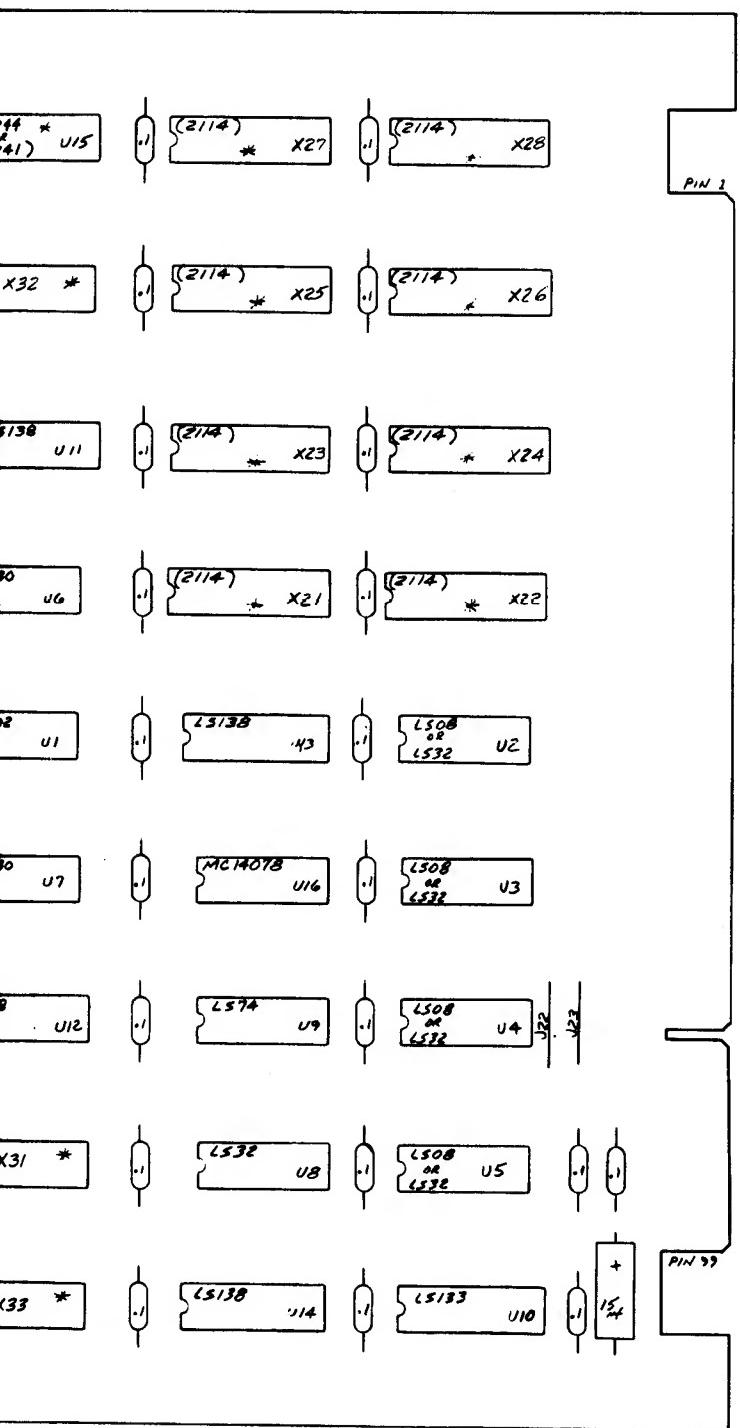


M051-00873-A033

DATE	NAME	74080070	MIDWAY MFG. CO.
74LS RAM / RAM 8000			
GORE	GORE	GORE	GORE
AQ92-71364 - Rev.000	AQ92-71364 - Rev.000	AQ92-71364 - Rev.000	AQ92-71364 - Rev.000

DOMESTIC

PAGE 63



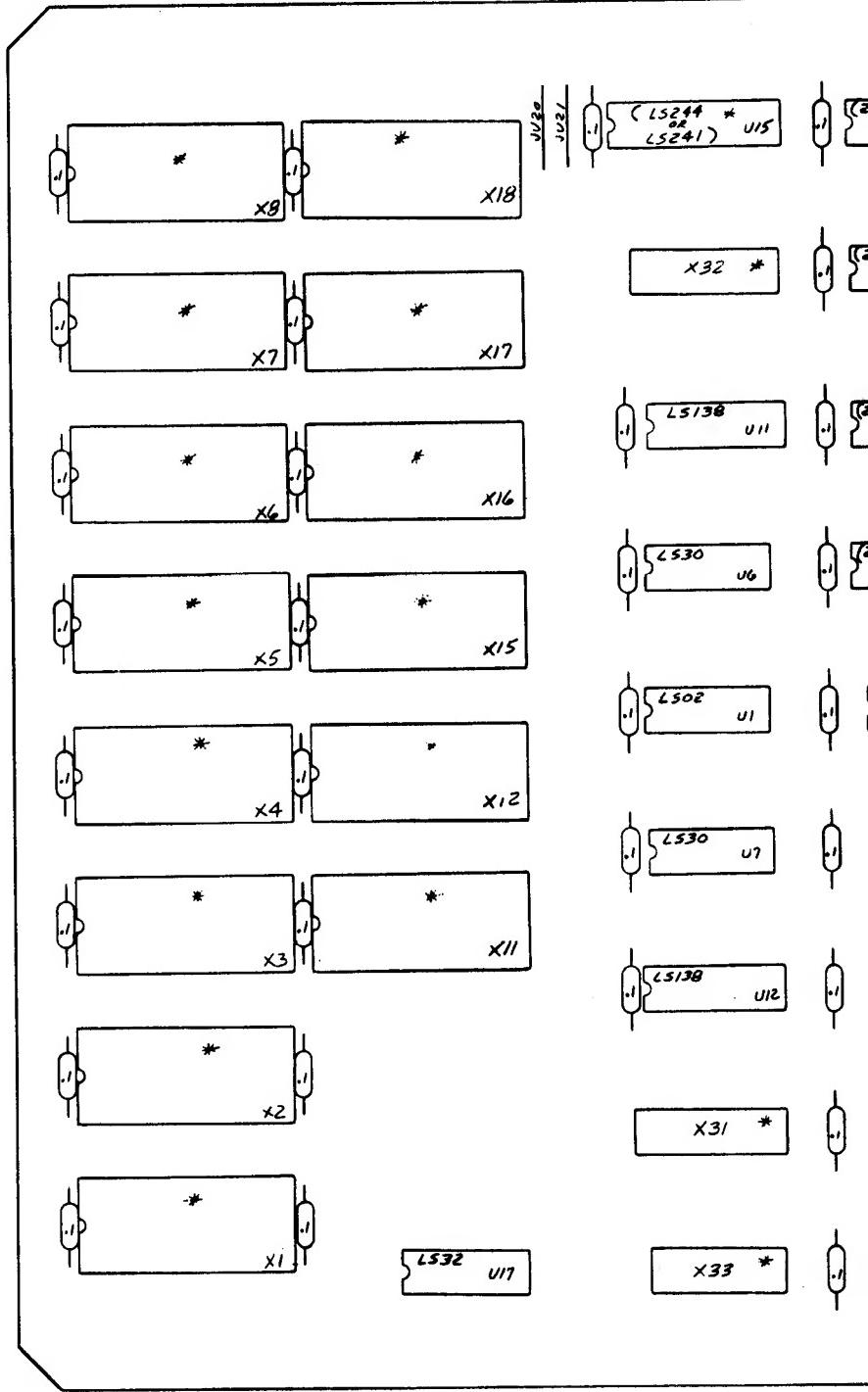
SIDE

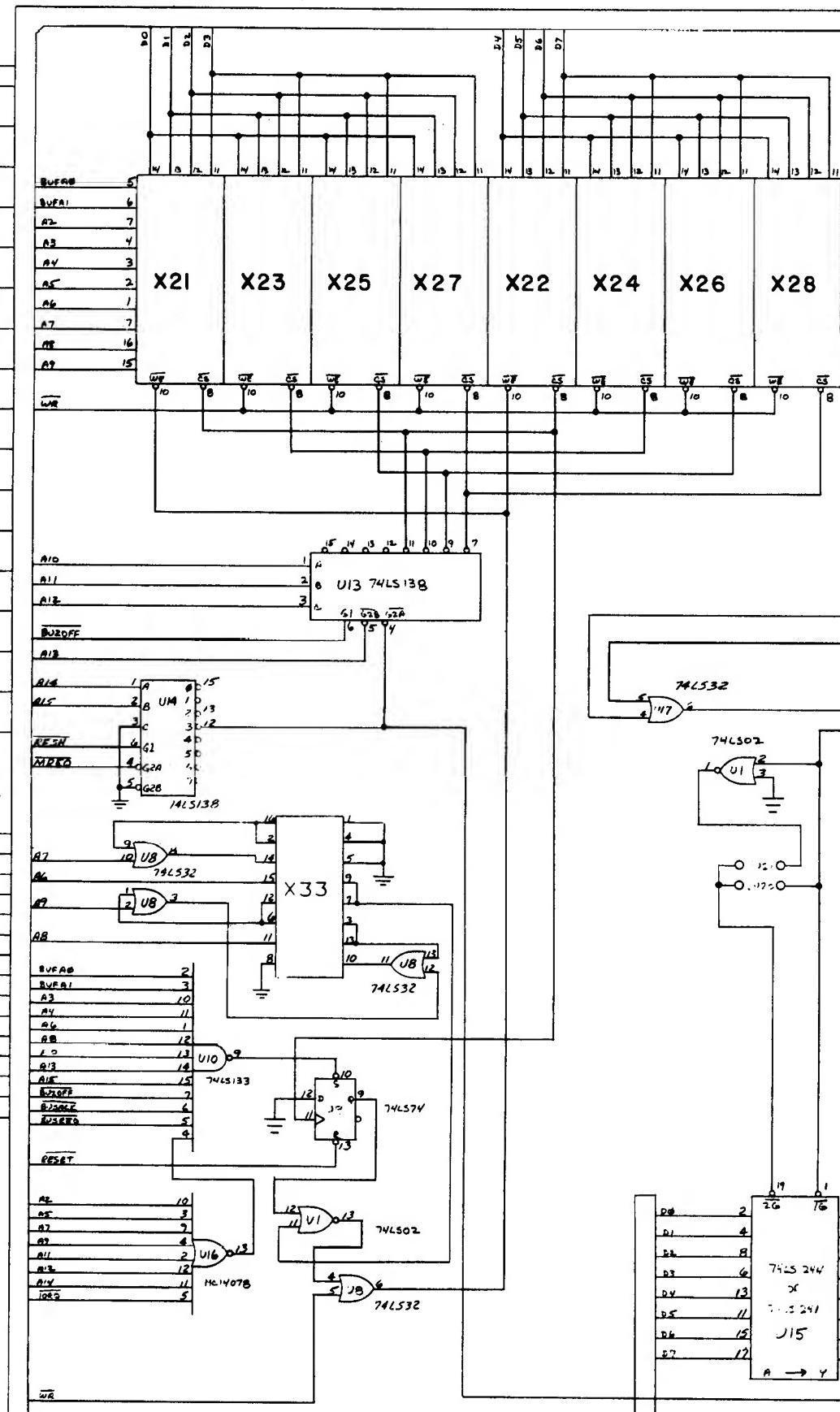
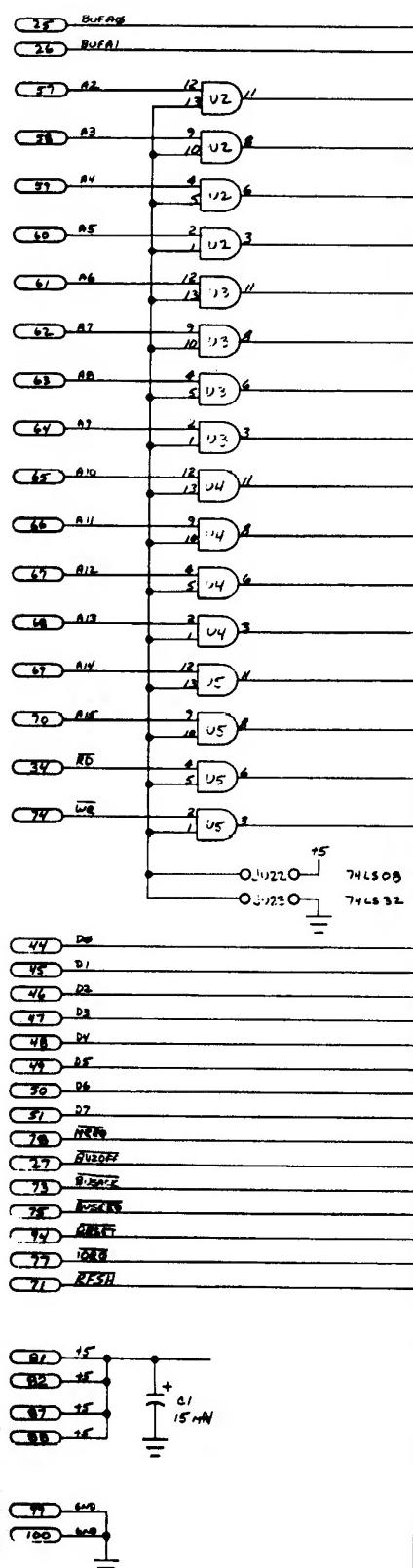
\* - DENOTES WHICH POSITION RECEIVES I.C. SOCKET.

FOREIGN

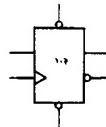
M051-00073-A031

		SCALE 1:1	DATE 1/3/80	DRAWN BY JAY
		MATERIAL	FINISH	TITLE PDP Ram 30 (44K)
NO. 9082-91374-A000				
PROD. RECORDED 10/10/80				

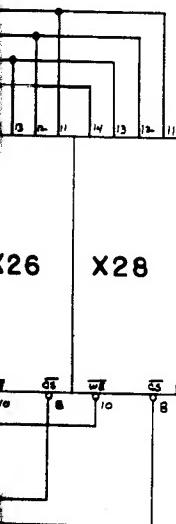




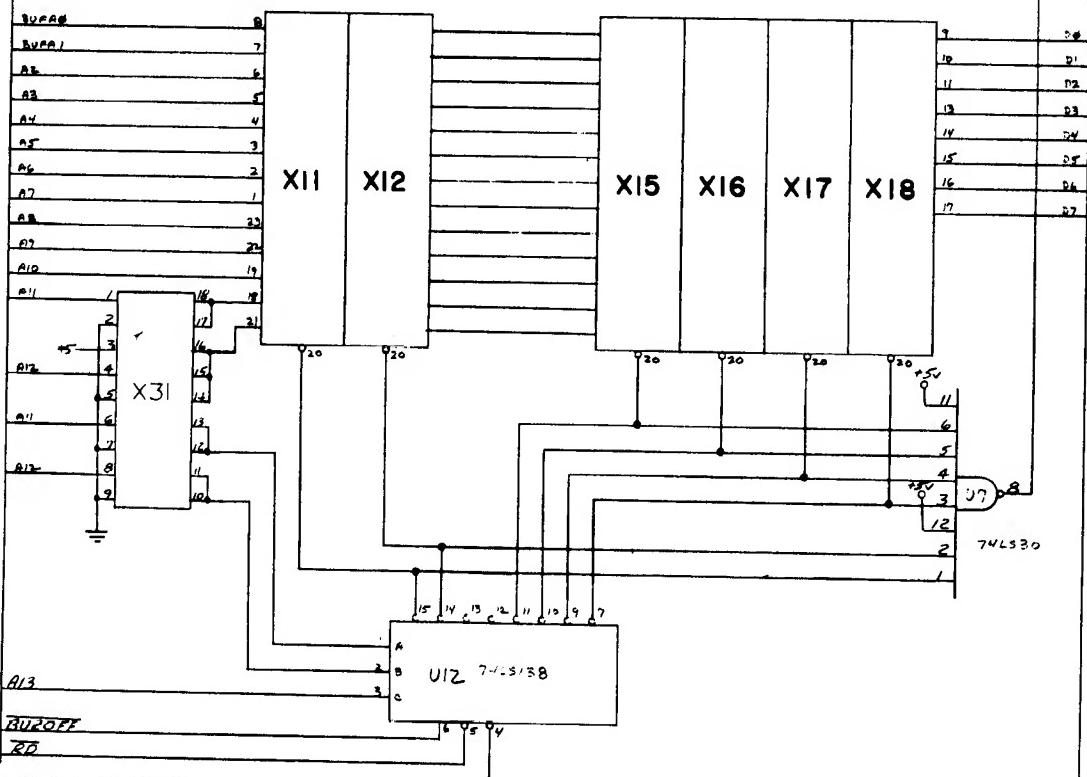
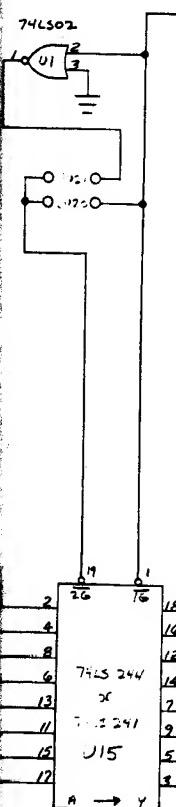
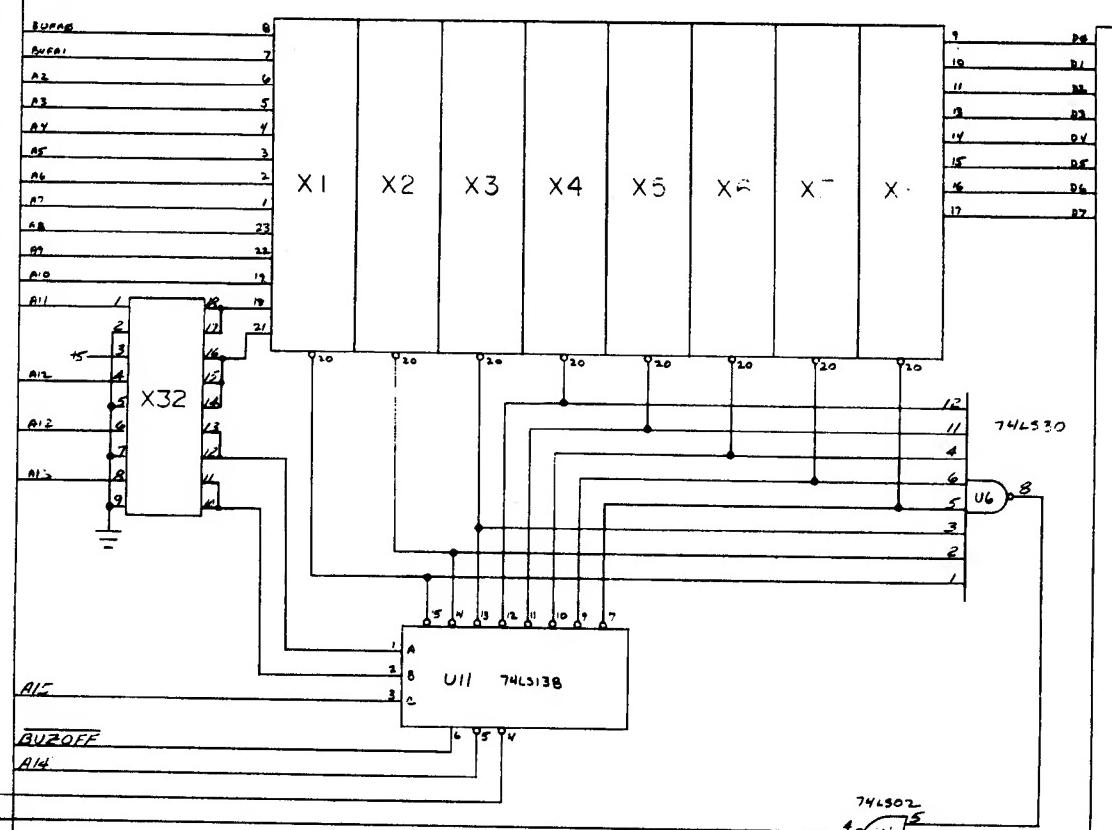
NOT USED



M051-00873.



(8)  
2114  
RAMS



M051-00873-A034

SCALE NONE	DATE 7-20-80 OTO	DRAWN BY MIDWAY MFG. CO.
MATERIAL	FINISH	TITLE ROM/RAM CARD (44K)
PC BOARD	PC BOARD	FOR C64
ROUTING	ROUTING	NO A082-91374-1000

Prod. Package 1/4" x 10.00

Serial No. 1

Rev. A

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

32

33

34

35

36

37

38

39

40

41

42

43

44

45

46

47

48

49

50

51

52

53

54

55

56

57

58

59

60

61

62

63

64

65

66

67

68

69

70

71

72

73

74

75

76

77

78

79

80

81

82

83

84

85

86

87

88

89

90

91

92

93

94

95

96

97

98

99

100

101

102

103

104

105

106

107

108

109

110

111

112

113

114

115

116

117

118

119

120

121

122

123

124

125

126

127

128

129

130

131

132

133

134

135

136

137

138

139

140

141

142

143

144

145

146

147

148

149

150

151

152

153

154

155

156

157

158

159

160

161

162

163

164

165

166

167

168

169

170

171

172

173

174

175

176

177

178

179

180

181

182

183

184

185

186

187

188

189

190

191

192

193

194

195

196

197

198

199

200

201

202

203

204

205

206

207

208

209

210

211

212

213

214

215

216

217

218

219

220

221

222

223

224

225

226

227

228

229

230

231

232

233

234

235

236

237

238

239

240

241

242

243

244

245

246

247

248

249

250

251

252

253

254

255

256

257

258

259

260

261

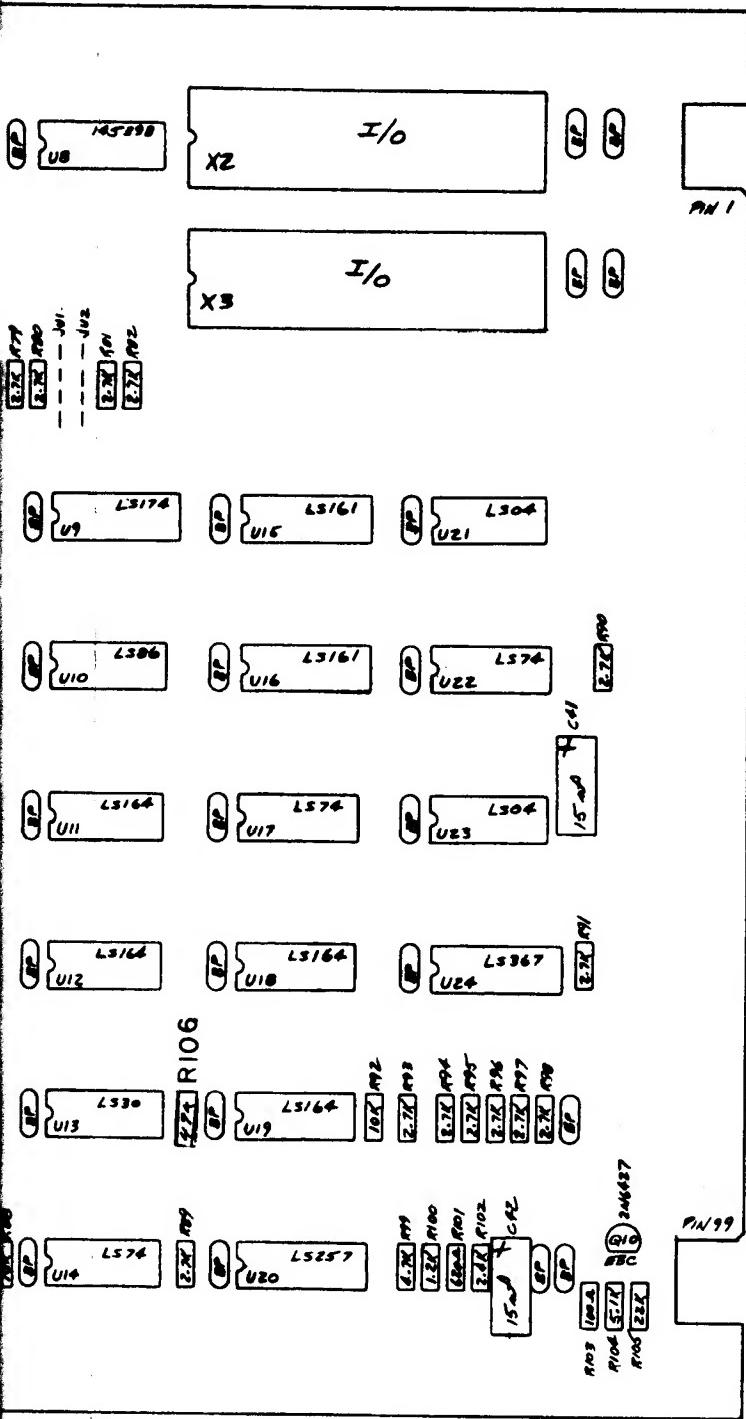
262

263

264

265

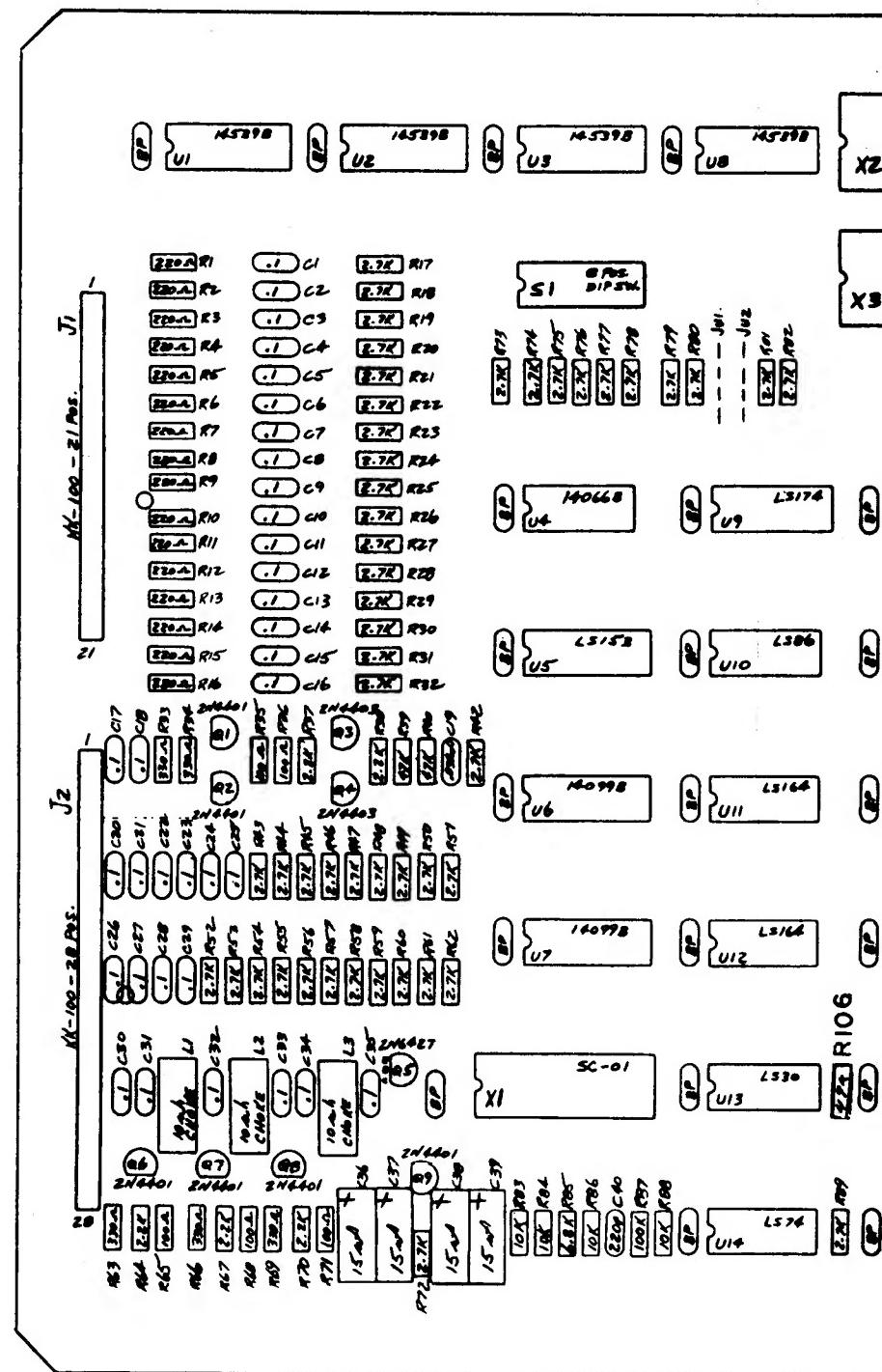
266

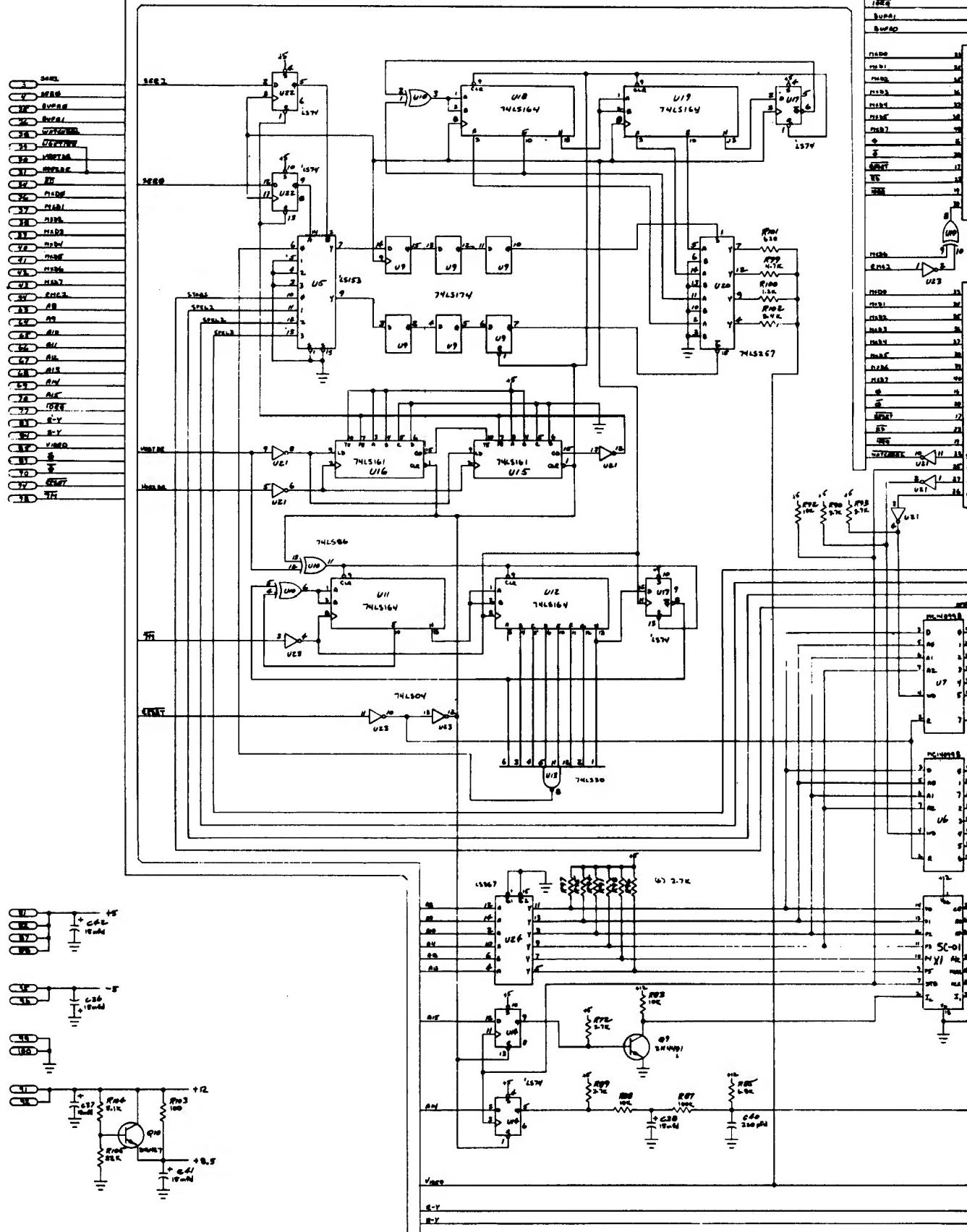


COMPONENT SIDE VIEW

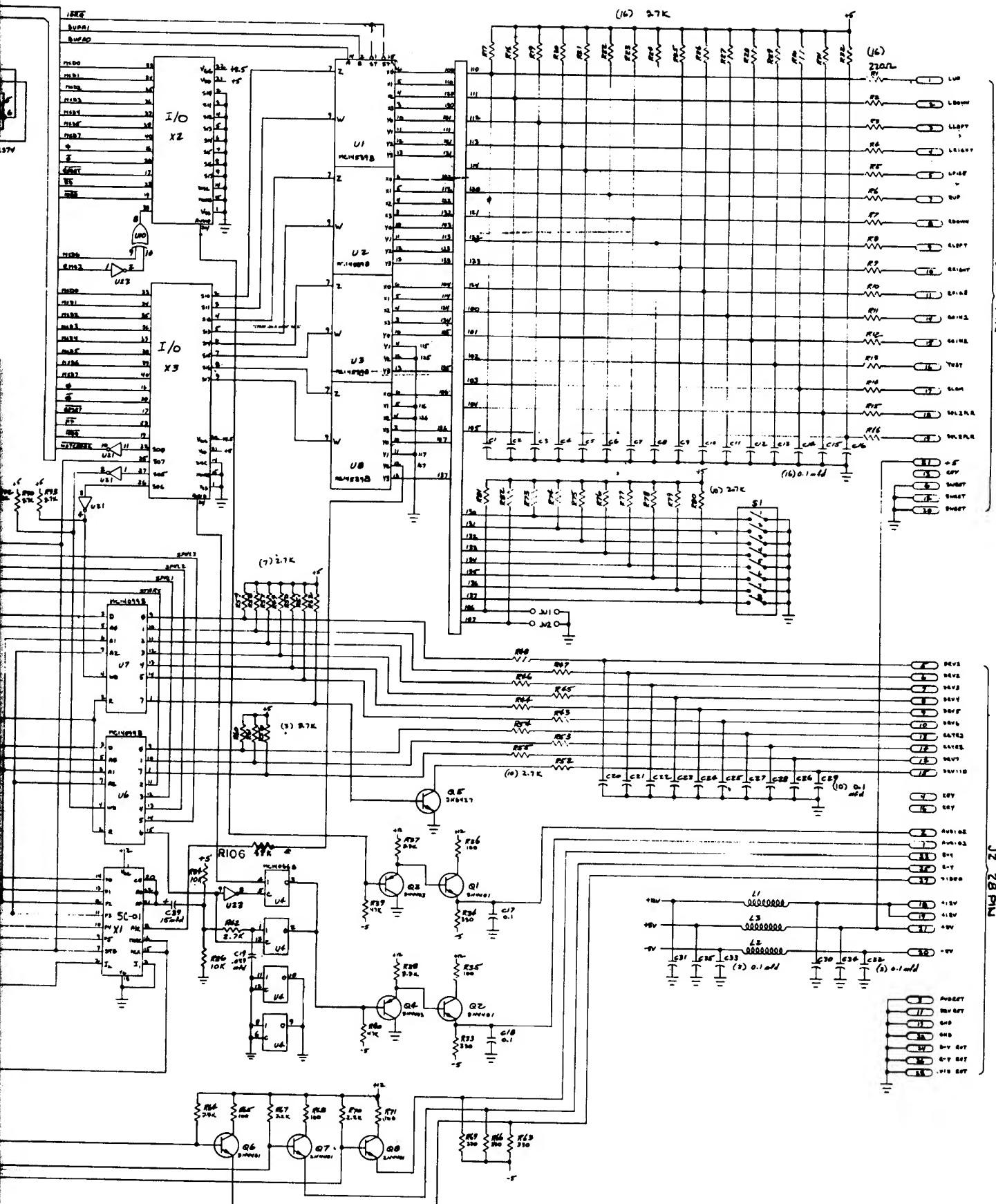
M051-00873-C038

		SCALE	DATE	DRAWN BY	
		Z-1	7-30	CZ	MIDWAY MFG. CO.
		MATERIAL		FINISH	GOLF GAME 80
	1-19-88				FOR CCR
B	Alum. C1024	N-7-88	100-1-000	100-1-000	A087-90708-C073
	Alum. Anodized	NW-88			





\*C VERSION LOGIC HAS 47K RESISTOR  
THAT IS IN TRACE OF PIN-8 OF SC-01  
IN THE B VERSION THE 47K IS SHORTED

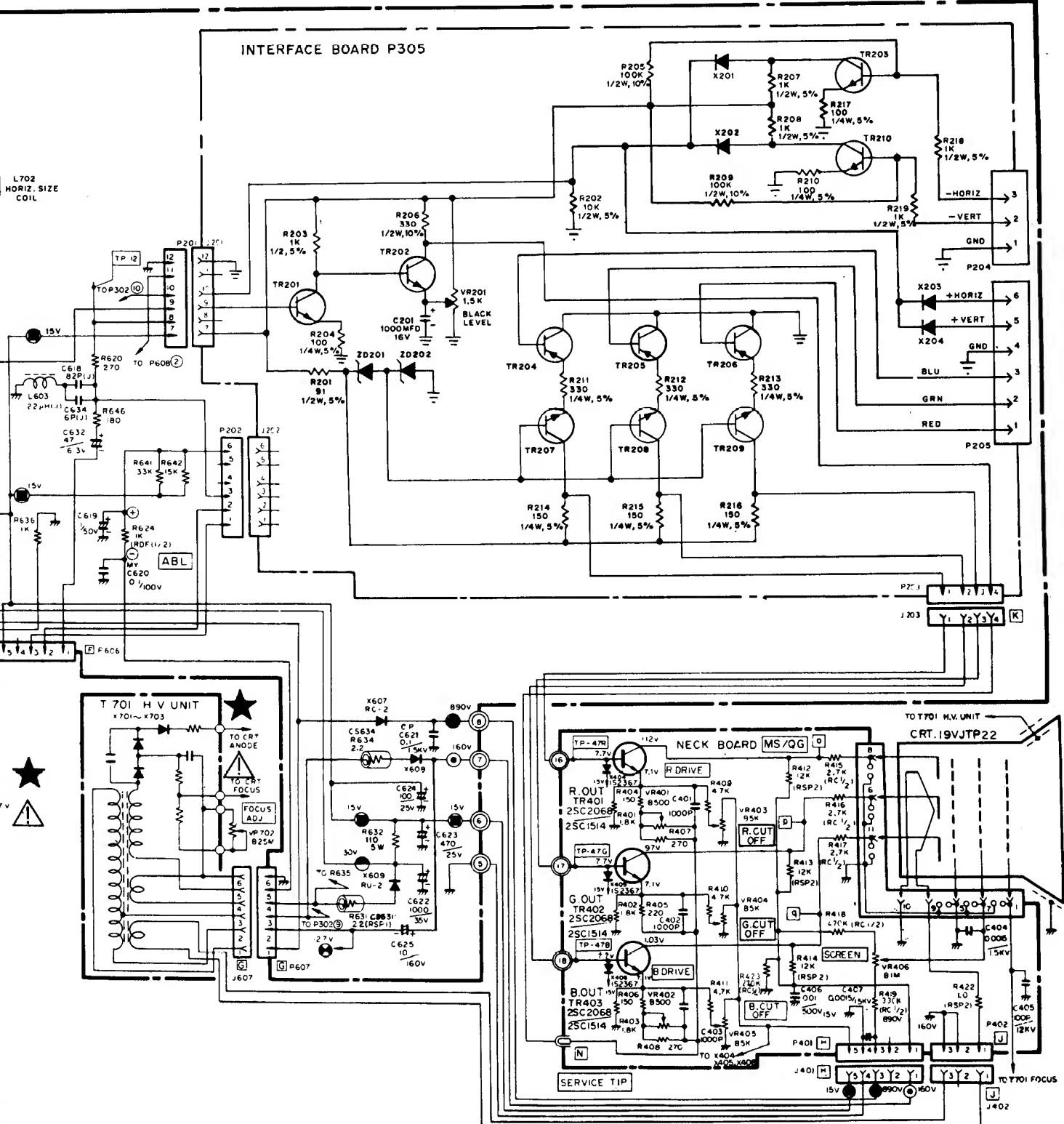


GOLF GAME BOARD

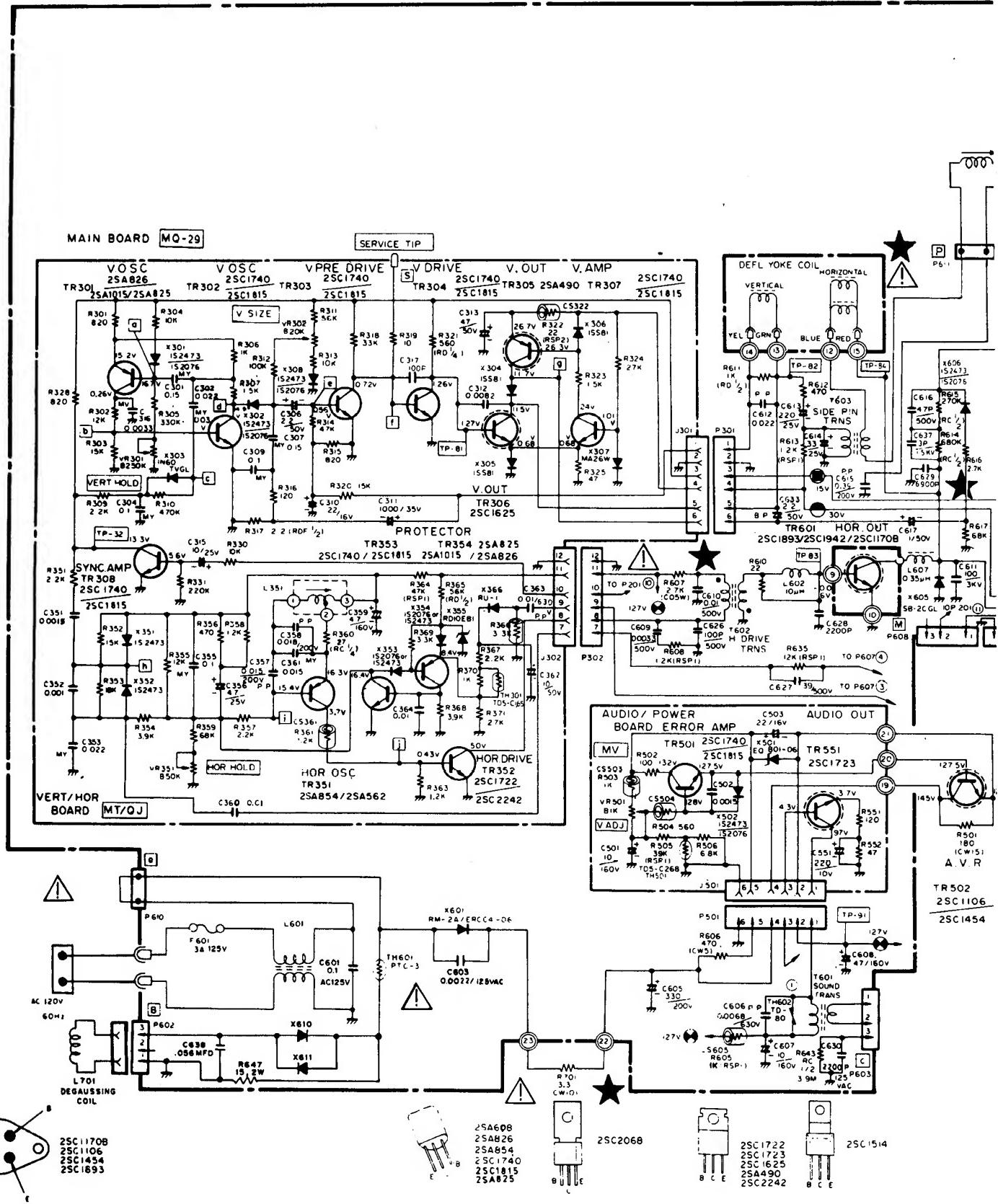
A084-90708-C873

- M051-00873-C024

OR SCHEMATIC DIAGRAM



K4606- 5800



# VERT/HOR BOARD (MT/QJ)

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
<b>RESISTORS</b>					
R301	203X6500-628	820 Ohm, ± 5%, 1/8W Carbon	C313	203X0025-087	47 uF, 50V Electrolytic
R302	203X6500-902	12k Ohm, ± 5%, 1/8W Carbon	C315	203X0015-082	10 uF, 25V Electrolytic
R303	203X6500-927	15k Ohm, ± 5%, 1/8W Carbon	C316	203X1100-220	3300 uF, 50V, ± 10% Mylar
R304	203X6500-886	10k Ohm, ± 5%, 1/8W Carbon	C317	202X8000-616	100 pF, 50V, ± 10% Ceramic
R305	203X6501-241	330k Ohm, ± 5%, 1/8W Carbon	C351	202X7000-281	1500 pF, 50V, ± 10% Ceramic
R306	203X6500-645	1k Ohm, ± 5%, 1/8W Carbon	C352	202X7000-247	1000 pF, 50V, ± 10% Ceramic
R307	203X6500-689	1.5k Ohm, ± 5%, 1/8W Carbon	C353	203X1100-573	0.022 uF, 50V, ± 10% Mylar
R309	203X6500-724	2.2k Ohm, ± 5%, 1/8W Carbon	C355	203X1100-858	0.1 uF, 50V, ± 10% Mylar
R310	203X6501-285	470k Ohm, ± 5%, 1/8W Carbon	C356	203X0015-105	4.7 uF, 25V Electrolytic
R311	203X6501-065	56k Ohm, ± 5%, 1/8W Carbon	C357	203X1201-013	0.015uF, 200V ± 10% PP
R312	203X6501-126	100k Ohm, ± 5%, 1/8W Carbon	C358	203X1201-034	0.018 uF, 200V, ± 10% PP
R313	203X6001-326	10k Ohm, ± 5%, 1/8W Carbon	C359	203X0040-013	4.7 uF, 160V Electrolytic
R314	203X6501-044	47k Ohm, ± 5%, 1/8W Carbon	C360	202X7000-482	0.01 uF, 50V, ± 10% Ceramic
R315	203X6500-628	820 Ohm, ± 5%, 1/8W Carbon	C361	203X1100-509	0.015 uF, 50V, ± 10% Mylar
R316	203X6500-420	120 Ohm, ± 5%, 1/8W Carbon	C362	203X0025-058	10 uF, 50V Electrolytic
R317	203X6206-441	2.2 Ohm, ± 5%, 1/2W Carbon	C363	203X1205-487	0.01 uF, 630V, ± 10% PP
R319	203X6500-169	100 Ohm, ± 5%, 1/8W Carbon	C364	202X7000-482	0.01 uF, 50V, ± 10% Ceramic
R320	203X6500-927	15k Ohm, ± 5%, 1/8W Carbon			
R321	203X6700-509	560 Ohm, ± 5%, 1/2W Carbon			
R322	203X9100-121	22 Ohm, ± 5%, 2W M.O.			
R323	203X6500-689	1.5k Ohm, ± 5%, 1/8W Carbon			
R324	203X6500-988	27k Ohm, ± 5%, 1/8W Carbon	TR301	200X4082-614	Transistor, 2SA826Q
R325	203X6500-326	47 Ohm, ± 5%, 1/8W Carbon	TR302	200X3174-006	Transistor, 2SC1740Q
R328	203X6500-628	820 Ohm, ± 5%, 1/8W Carbon	TR303	200X3174-006	Transistor, 2SA1740Q
R330	203X6500-886	10k Ohm, ± 5%, 1/8W Carbon	TR304	200X3174-006	Transistor, 2SC1740Q
R331	203X6501-209	220k Ohm, ± 5%, 1/8W Carbon	TR305	200X4049-081	Transistor, 2SA490YLBGLI
R351	203X6500-724	2.2k Ohm, ± 5%, 1/8W Carbon	TR306	200X3162-538	Transistor, 2SC1625YLBGLI
R352	203X6500-927	15k Ohm, ± 5%, 1/8W Carbon	TR307	200X3174-014	Transistor, 2SC1740R
R353	203X6500-944	18k Ohm, ± 5%, 1/8W Carbon	TR308	200X3174-006	Transistor, 2SC1740Q
R354	203X6500-783	3.9k Ohm, ± 5%, 1/8W Carbon	TR351	200X4085-415	Transistor, 2SA854Q
R355	203X6500-902	12k Ohm, ± 5%, 1/8W Carbon	TR352	200X3172-208	Transistor, 2SC1722BKS
R356	203X6500-561	470 Ohm, ± 5%, 1/8W Carbon	TR353	200X3174-006	Transistor, 2SC1740Q
R357	203X6500-724	2.2k Ohm, ± 5%, 1/8W Carbon	TR354	200X4082-614	Transistor, 2SA826Q
R358	203X6500-666	1.2k Ohm, ± 5%, 1/8W Carbon	X301	201X2010-144	Diode, (SI) IS2473-T72
R359	203X6501-088	68k Ohm, ± 5%, 1/8W Carbon	X302	201X2010-144	Diode, (SI) IS2473-T72
R360	203X5500-471	27 Ohm, ± 5%, 1/4W Comp.	X303	200X8000-026	Diode, (GE), IN60TVGL
R361	203X6000-998	1.2k Ohm, ± 5%, 1/8W Carbon	X304	200X8010-165	Diode (SI) ISS81
R363	203X6500-666	1.2k Ohm, ± 5%, 1/8W Carbon	X305	201X2010-165	Diode (SI) ISS81
R364	203X9014-988	47k Ohm, ± 5%, 1W M.O.	X306	201X2010-165	Diode (SI) ISS81
R365	203X6700-989	56k Ohm, ± 5%, 1/2W Carbon	X307	200X8010-102	Diode (SI) MA26W
R366	203X6001-148	3.3k Ohm, ± 5%, 1/8W Carbon	X308	200X8010-094	Diode (SI) IS2473
R367	340X2222-734	2.2k Ohm, ± 5%, 1/2W Carbon	X351	201X2010-144	Diode (SI) IS2473-T72
R368	203X6500-785	3.9k Ohm, ± 5%, 1/8W Carbon	X352	201X2010-144	Diode (SI) IS2473-T72
R369	203X6500-762	3.3k Ohm, ± 5%, 1/4W Carbon	X353	201X2010-144	Diode (SI) IS2473-T72
R370	302X6100-961	1k Ohm, ± 5%, 1/4W Carbon	X354	201X2010-144	Diode (SI) IS2473-T72
R371	203X6104-751	2.7k Ohm, ± 5%, 1/4W Carbon	X355	200X8220-851	Diode (Zener) RD10EBI
VR301	204X2122-093	Varistor, 250K Ohm, Vert. Hold	X366	200X8100-130	Diode (HS) RU-1 0.3 US
VR302	204X2114-065	Varistor, 20K Ohm, Vert. Size			
VR351	204X2114-059	Varistor, 50K Ohm, Hor. Hold			

## SEMICONDUCTORS

TR301	200X4082-614	Transistor, 2SA826Q
TR302	200X3174-006	Transistor, 2SC1740Q
TR303	200X3174-006	Transistor, 2SA1740Q
TR304	200X3174-006	Transistor, 2SC1740Q
TR305	200X4049-081	Transistor, 2SA490YLBGLI
TR306	200X3162-538	Transistor, 2SC1625YLBGLI
TR307	200X3174-014	Transistor, 2SC1740R
TR308	200X3174-006	Transistor, 2SC1740Q
TR351	200X4085-415	Transistor, 2SA854Q
TR352	200X3172-208	Transistor, 2SC1722BKS
TR353	200X3174-006	Transistor, 2SC1740Q
TR354	200X4082-614	Transistor, 2SA826Q
X301	201X2010-144	Diode, (SI) IS2473-T72
X302	201X2010-144	Diode, (SI) IS2473-T72
X303	200X8000-026	Diode, (GE), IN60TVGL
X304	200X8010-165	Diode (SI) ISS81
X305	201X2010-165	Diode (SI) ISS81
X306	201X2010-165	Diode (SI) ISS81
X307	200X8010-102	Diode (SI) MA26W
X308	200X8010-094	Diode (SI) IS2473
X351	201X2010-144	Diode (SI) IS2473-T72
X352	201X2010-144	Diode (SI) IS2473-T72
X353	201X2010-144	Diode (SI) IS2473-T72
X354	201X2010-144	Diode (SI) IS2473-T72
X355	200X8220-851	Diode (Zener) RD10EBI
X366	200X8100-130	Diode (HS) RU-1 0.3 US

## MISCELLANEOUS

J301	204X9300-958	Socket, 6 Pin
J302	204X9300-958	Socket, 6 Pin
P301	204X9601-195	Plug, 6 Pin
P302	204X9601-195	Plug, 6 Pin
TH301	201X0000-534	Thermistor

## TRANSFORMERS & COILS

L351	201X5200-091	Coll, Horiz. Osc.
------	--------------	-------------------

## POWER BOARD (MV)

RESISTORS		CAPACITORS	TRANSFORMERS & COILS	MISCELLANEOUS	
R501	204X1725-052	180 Ohm, ± 10%, 15W WW	C503	203X0010-011	22 uF, 16V Electrolytic
R502	203X6000-608	100 Ohm, ± 5%, 1/8W Carbon	C551	203X0005-046	220 uF, 10V Electrolytic
R503	203X6000-960	1k Ohm, ± 5%, 1/8W Carbon			
R504	203X6000-879	560 Ohm, ± 5%, 1/8W Carbon	TR501	200X3174-006	Transistor, 2SC1740Q
R505	203X9014-965	39k Ohm, ± 5%, 1W M.O.	△★ TR502	200X3145-404	Transistor, 2SC1454
R506	203X6500-842	6.8k Ohm, ± 5%, 1/8W Carbon	TR551	200X3172-305	Transistor, 2SC1723
R551	203X6500-420	120 Ohm, ± 5%, 1/8W Carbon	X501	201X2230-042	Diode, (SI) Zener EQB01-06V
VR501	204X2050-001	Varistor Vert. Adj.	X502	201X2010-144	Diode, (SI) IS2473-T72

C501	203X0040-020	10 uF, 160V Electrolytic	J501	204X9300-958	Socket, 6 Pin
C502	202X7000-281	1500 pF, 50V, ± 10% Ceramic	P501	204X9601-195	Plug, 6 Pin

TH501	201X0000-618	Thermistor
-------	--------------	------------

## NECK BOARD (MS/QG)

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
<b>RESISTORS</b>					
R401	203X6500-709	1.8k Ohm ± 5% 1/8W Carbon	C403	202X7000-247	1000 pF, 50V, 10% Ceramic
R402	203X6500-709	1.8k Ohm ± 5% 1/8W Carbon	C404	202X7110-019	1500 pF, 2kV ± 10% Ceramic
R403	203X6500-709	1.8k Ohm ± 5% 1/8W Carbon	C405	202X7150-018	100 pF, 12kV, ± 10% Ceramic
R404	203X6500-447	150 Ohm ± 5% 1/8W Carbon	C406	202X7050-483	.01 uF, 500V, ± 10% Ceramic
R405	203X6500-481	220 Ohm ± 5% 1/8W Carbon	C407	202X7110-019	1500 pF, 2kV ± 10% Ceramic
R406	203X6500-447	150 Ohm ± 5% 1/8W Carbon	C408	202X8000-550	68 pF, 50V, ± 10% Ceramic
R407	203X6500-508	270 Ohm ± 5% 1/8W Carbon	C409	202X8000-550	68 pF, 50V, ± 10% Ceramic
R408	203X6500-508	270 Ohm ± 5% 1/8W Carbon	C410	202X8000-550	68 pF, 50V, ± 10% Ceramic
R409	203X6500-800	4.7k Ohm ± 5% 1/8W Carbon			
R410	203X6500-800	4.7k Ohm ± 5% 1/8W Carbon			
R411	203X6500-800	4.7k Ohm ± 5% 1/8W Carbon			
R412	203X9104-809	12k Ohm ± 5% 2.0W Metal Oxide			
R413	203X9104-809	12k Ohm ± 5% 2.0W Metal Oxide			
R414	203X9104-809	12k Ohm ± 5% 2.0W Metal Oxide			
R415	203X5601-313	2.7k Ohm ± 10% 1/2W Comp.	TR401	200X3206-800	Transistor, 2SC2068, 2SC1514 (R output)
R416	203X5601-313	2.7k Ohm ± 10% 1/2W Comp.	TR402	200X3206-800	Transistor, 2SC2068, 2SC1514 (G output)
R417	203X5601-313	2.7k Ohm ± 10% 1/2W Comp.	TR403	200X3206-800	Transistor, 2SC2068, 2SC1514 (B output)
R418	203X5602-254	470k Ohm ± 10% 1/2W Comp.	X404	201X2100-126	Diode, IS2367 (protector)
R419	203X5602-185	330k Ohm ± 10% 1/2W Comp.	X405	201X2100-126	Diode, IS2367 (protector)
R422	203X9105-117	1.0 Ohm ± 10% 2W Metal Oxide	X406	201X2100-126	Diode, IS2367 (protector)
R423	203X5102-155	270k Ohm ± 5% 1/4W Carbon			
VR401	204X2115-014	500 Ohm Varistor R Drive			
VR402	204X2115-014	500 Ohm Varistor B Drive			
VR403	204X2115-006	5k Ohm Varistor R Cutoff			
VR404	204X2115-006	5k Ohm Varistor G Cutoff			
VR405	204X2115-006	5k Ohm Varistor B Cutoff			
VR406	204X2000-025	1M Ohm Varistor Screen			
<b>SEMICONDUCTORS</b>					
C401	202X7000-247	1000 pF, 50V, 10% Ceramic	J401	206X5003-729	Socket, 5 Pin
C402	202X7000-247	1000 pF, 50V, 10% Ceramic	J402	206X5003-983	Socket, 3 Pin
			P401	204X9600-329	Plug, 5 Pin
			P402	204X9600-254	Plug, 3 Pin
<b>MISCELLANEOUS</b>					
<b>CAPACITORS</b>					

### △★ 297X2000-072 HIGH VOLTAGE ASSEMBLY (T701)

△★ R701	204X1625-058	3.3 Ohm, ± 10% 10W WW Resistor
VR702	204X3901-125	Focus Control
X701		Diode (SI HV) } Part of T701
X702		Diode (SI HV) }
X703		Diode (SI HV)

### FINAL ASSEMBLY PARTS

△★ 88X-0129-506	19VJTP22 Pix Tube
38A5554-000	Assy. Purity Shld/Degaussing
205X9800-256	Lateral/Purity Assembly
△★ 202X1110-810	Yoke, Deflection
208X2000-946	CRT Socket
297X2000-072	HV Unit (T701)
6A0397	Plug, Line Cord
9A2753-003	Degaussing Coll (L701)

### INTERFACE BOARD (P305)

(MODEL 19K4606)

#### RESISTORS

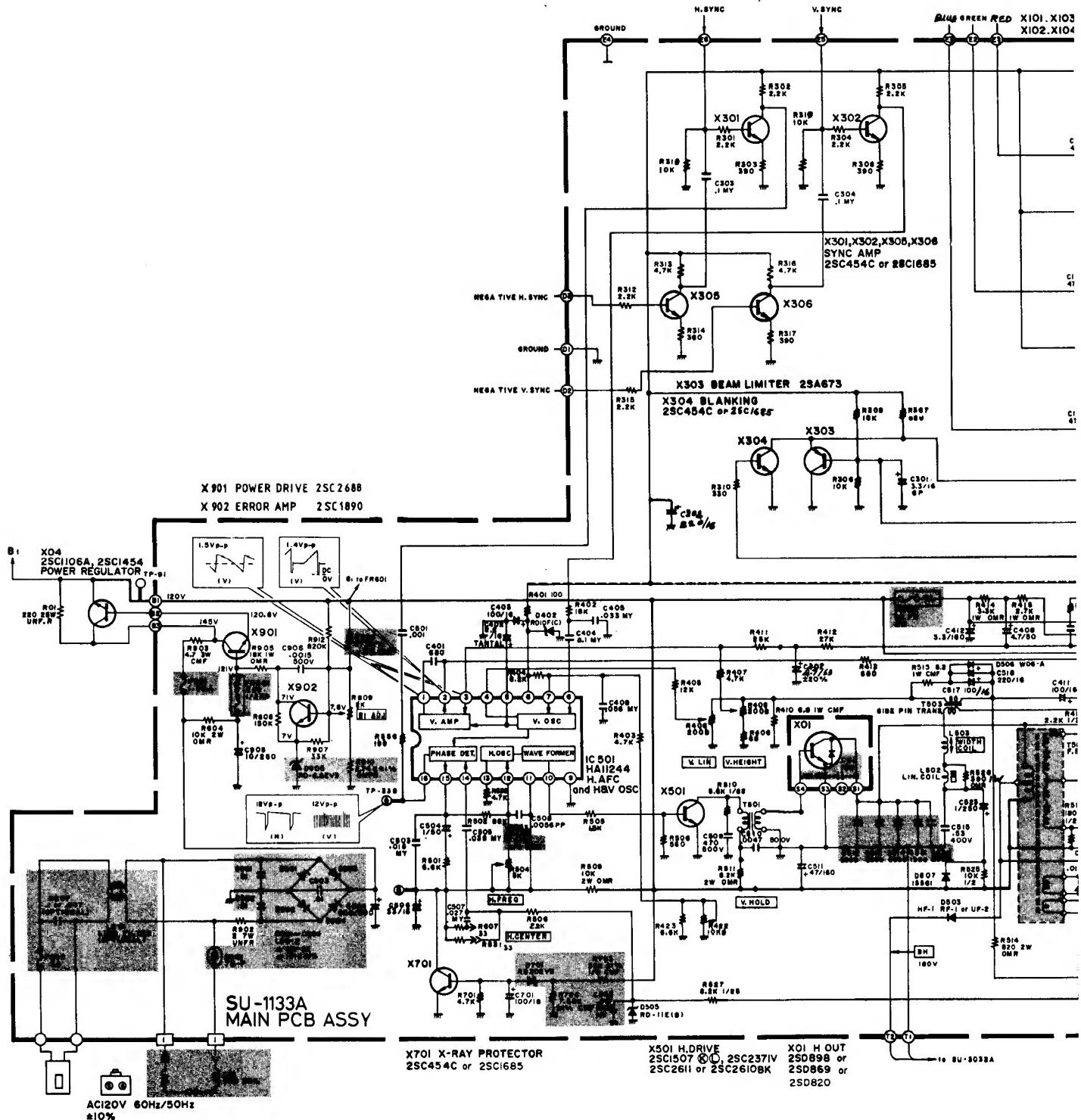
R201	340X3910-934	91 Ohm, 5%, 1/2W Carbon
R203	340X3102-934	1k Ohm, 5%, 1/2W Carbon
R204	340X2101-934	100 Ohm, 5%, 1/4W Carbon
R206	340X3331-944	330 Ohm, 10%, 1/2W Carbon
R207	340X3102-934	1k Ohm, 5%, 1/2W Carbon
R208	340X2152-934	1.5k Ohm, 5%, 1/4W Carbon
R209	340X2101-934	100 Ohm, 5%, 1/4W Carbon
R210	340X3102-934	1k Ohm, 5%, 1/2W Carbon
R211	340X2331-934	330 Ohm, 5%, 1/4W Carbon
R212	340X2331-934	330 Ohm, 5%, 1/4W Carbon
R213	340X2331-934	330 Ohm, 5%, 1/4W Carbon
R214	340X2201-934	200 Ohm, 5%, 1/4W Carbon
R215	340X2201-934	200 Ohm, 5%, 1/4W Carbon
R216	340X2201-934	200 Ohm, 5%, 1/4W Carbon
VR201	40X0590-017	1.5k Ohm, Black Level Control

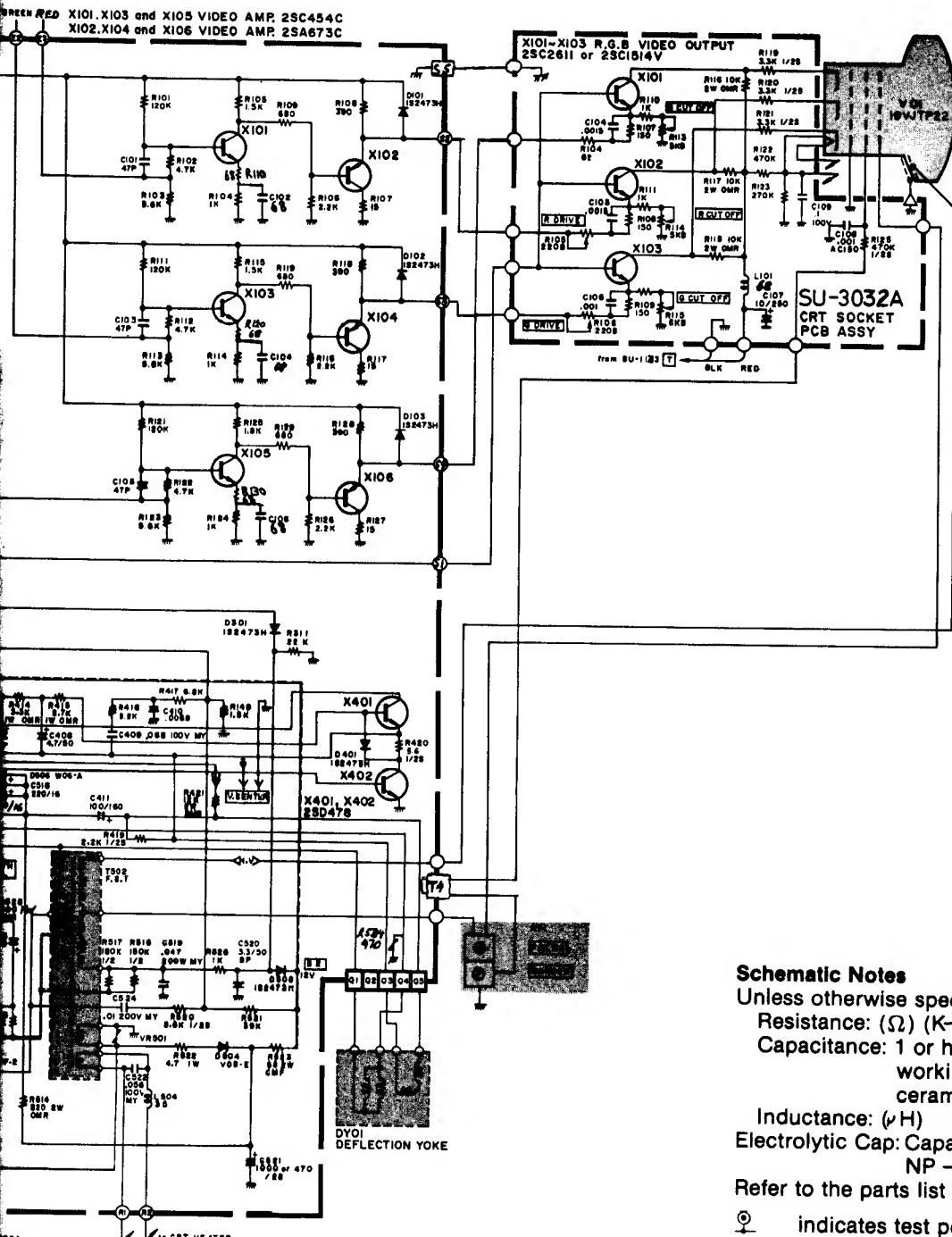
#### SEMICONDUCTORS

TR201	86X0121-001	Transistor (NPN)
TR202	86X0121-001	Transistor (NPN)
TR203	86X0121-001	Transistor (NPN)
TR204	86X0066-001	Transistor (PNP)
TR205	86X0066-001	Transistor (PNP)
TR206	86X0066-001	Transistor (PNP)
TR207	86X0121-001	Transistor (NNP)
TR208	86X0121-001	Transistor (NPN)
TR209	86X0121-001	Transistor (NPN)
ZD201	66X0040-018	Diode, Zener, 6.8v, 5%, 0.5W
ZD202	66X0040-019	Diode, Zener, 3.9v, 5%, 0.5W

#### MISCELLANEOUS

J201	204X9300-958	Socket, 6 Pin
J202	204X9300-958	Socket, 6 Pin
J203	206X5019-207	Socket, 4 Pin
P201	204X9601-195	Plug, 6 Pin
P202	204X9601-195	Plug, 6 Pin
P203	204X9600-845	Plug, 4 Pin
P205	6A0393-006	Plug, 6 Pin





#### Schematic Notes

Unless otherwise specified

Resistance: ( $\Omega$ ) ( $K \rightarrow K\Omega$ ,  $M \rightarrow M\Omega$ ), 1/4 (W) carbon resistor

Capacitance: 1 or higher  $\rightarrow$  (pF), less than 1  $\rightarrow$  (fF)

working voltage  $\rightarrow$  50 (V)

ceramic capacitor

Inductance: (uH)

Electrolytic Cap: Capacitance Value (uF)/working voltage (V),  
 NP  $\rightarrow$  non-polar (or bipolar) electrolytic cap.

Refer to the parts list for additional component information.

$\ominus$  indicates test point connection

$\not\ominus$  indicates chassis ground unless otherwise specified

Hz indicates cycles per second

For safety purposes (and continuing reliability)

$\triangle$  replace all components marked with safety symbol with identical type.

NOTE: FR  $\rightarrow$  fusible resistor (—融断—)

Parts identification on circuit boards:

e.g. SU1126A (R107 = R1107)  
 SU3030A (R113 = R3113)

00-4147-04  
 G07-CB0

## **REPLACEMENT PARTS LIST - ELECTROHOME 19" MONITOR**

Components identified by the  $\Delta$  symbol in the PARTS LIST and on the Schematic have special characteristics important to safety.

**DO NOT** degrade the safety of the set through improper servicing.

### **Abbreviations for Resistors and Capacitors**

#### **Resistor**

C R	: Carbon Resistor
Comp. R	: Composition Resistor
OM R	: Oxide Metal Film Resistor
V R	: Variable Resistor
MF R	: Metal Film Resistor
CMF R	: Coating Metal Film Resistor
UNF R	: Nonflammable Resistor
F R	: Fusible Resistor

#### **Capacitor**

C Cap.	: Ceramic Capacitor
M Cap	: Mylar Capacitor
E Cap.	: Electrolytic Capacitor
BP E Cap.	: Bi-Polar (or Non-Polar) Electrolytic Capacitor
MM Cap.	: Metalized Mylar Capacitor
PP Cap.	: Polypropylene Capacitor
MPP Cap.	: Metalized PP Capacitor
PS Cap	: Polystyrol Capacitor
Tan. Cap.	: Tantal Capacitor

**NOTE:** When ordering replacement parts please specify the part number as shown in this list including part name, and model number. Complete information will help expedite the order.

Use of substitute replacement parts which do not have the same safety characteristics as specified, may create shock, fire or other hazards. For maximum reliability and performance, all parts should be replaced by those having identical specifications.

## **SERVICE REPLACEMENT PARTS LIST**

#### **Symbol**

#### **Description**

#### **Part Number**

Main P.C.B. Ass'y  
CRT Socket P.C.B. Ass'y  
Purity Shield Ass'y

SU-1133A  
SU-3032A  
07-220083-03

### Outside of the P.C.B. Ass'y

Symbol	Description	Part Number
△	Picture Tube 19"	17-7198-03
△	△Deflection Yoke	A29779-D = 21-141-01
△	PC Magnet	A75034-B = 29-32-01
△	△Flyback Transf.	A29951-B
△	△HVR	A46600-A
R05	UNF Resistor 220Ω,25W K	QRF258K-221
C04	C Capacitor 150pF, AC1.5KV	QCZ0101-005
X01	Si. Transistor	2SD870
X02	Si. Transistor	2SC1106A
SC	Screw #8-38	31-610818-06
SC	Screw 1/4 x 3/4 Pix Tube Mtg. (4)	31-601418-12
WA	Pyramidal Lock Washer (4)	33-255-01
	Nut Retainer, Pix Tube Mtg. (4)	33-494-01
	Clip — P.C.B. Support	33-629-02
	Standoff	33-670-010R-02
	Wire Terminal (Gnd. Strap)	34-228-03
	Terminal Lug (Gnd.)	34-33-04
	Groundstrap Assy.	34-574-02
	Grounding Spring	35-212-03
	Wire Hook (Gnd. Strap)	35-3053-02
	Purity Shield Holddown Clamp	35-2348-01
	Support Brkt. RH	35-3890-01
	Support Brkt. LH	35-3890-02
	Chassis Base	38-449-02
	Yoke Wedge (3)	39-1233-01

### Purity Shield Ass'y. Parts List

Symbol	Description	Part Number
D911, D912	Degaussing Coil	21-1007-30
	Rectifier 1 Amp 600V (2)	28-22-27
	Pin Terminal (2)	34-708-01
	Pin Terminal Housing	34-709-01
	Purity Shield (2 pcs.)	35-3847-01
	Purity Shield (2 pcs.)	35-3847-02
C911	Capacitor 100nF 10% 400V	48-171544-62
R921	Resistor, Wirewound 33Ω, 4W	42-113301-03
	Fire Retardent Term. Strip 4 Lug	34-492-09

### CRT Socket P.C.B. Ass'y (SU-3032A) Parts List

Resistors	Description	Part Number
R3105	V R 200	QVZ3234-022
R3106	V R 200	QVZ3234-022
R3113	V R 5K	QVZ3234-053
R3114	V R 5K	QVZ3234-053
R3115	V R 5K	QVZ3234-053
R3116	OM R 10KΩ2W J	QRG029J-103
R3117	OM R 10KΩ2W J	QRG029J-103
R3118	OM R 10KΩ2W J	QRG029J-103
R3119	Comp. R 3.3KΩ½W K	QRZ0039-332
R3120	Comp. R 3.3KΩ½W K	QRZ0039-332
C3121	Comp. R 3.3KΩ½W K	QRZ0039-332

Capacitors	Description	Part Number
Symbol		
C3107	E Cap. 10uF 250V A	QEWS5EA-106
C3108	C Cap. 1000pF DC1400V P	QCZ9001-102M

Coils	Description	Part Number
Symbol		
L3101	Peaking Coil	QQL043K-101

Semiconductors	Description	Part Number
Symbol		
X3101	Si. Transistor	2SC1514VC
X3102	Si. Transistor	2SC1514VC
X3103	Si. Transistor	2SC1514VC
Miscellaneous	Description	Part Number
Symbol	△CRT Socket	A76068

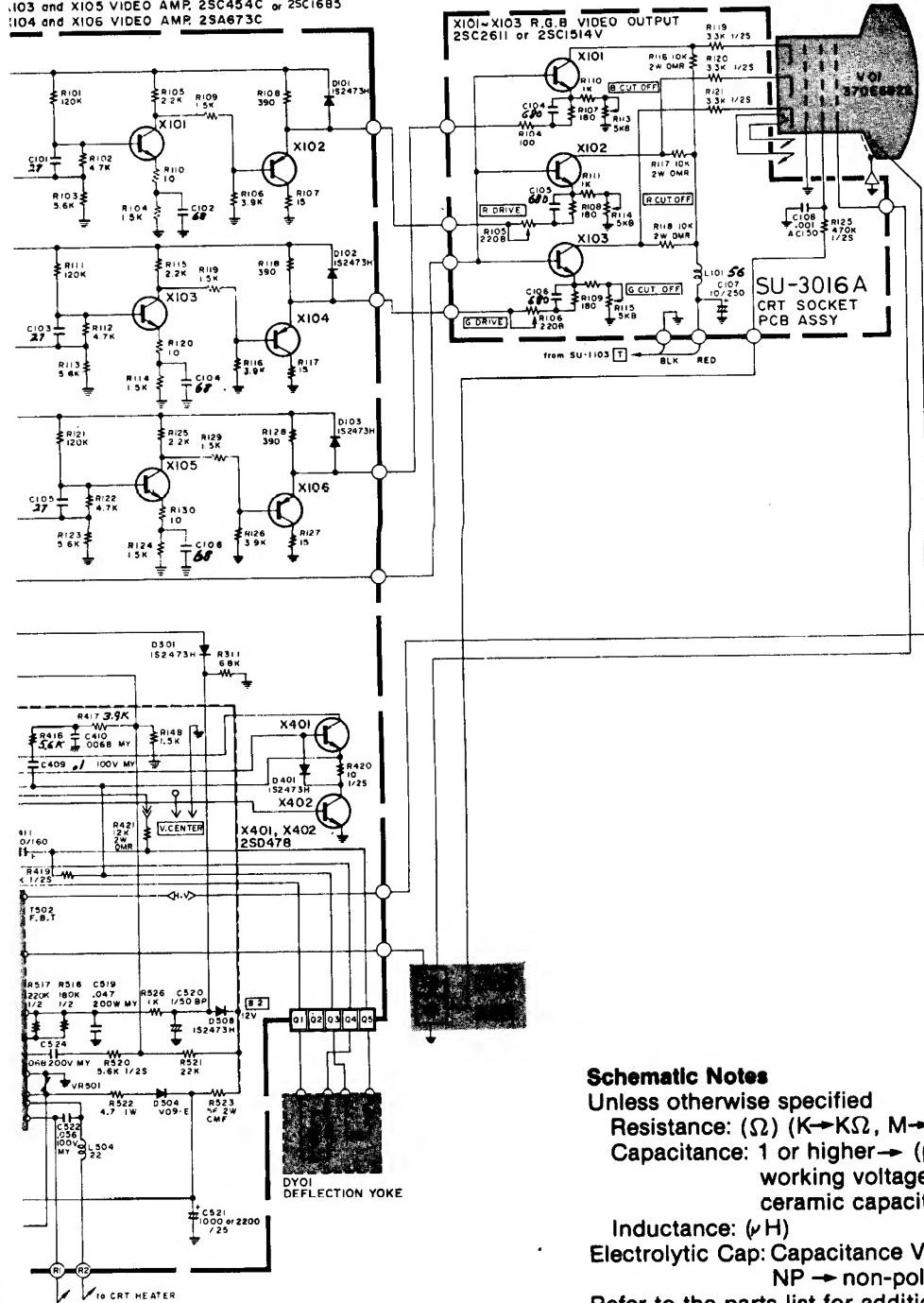
### Main PCB Ass'y (SU-1133A) Parts List

Resistors	Description	Part Number
Symbol		
R1406	V R 200Ω	QVZ3230-002
R1408	V R 200Ω	QVZ3230-002
R1410	CMF R 6.8Ω1W J	QRX019J-6R8
R1414	OM R 3.3KΩ1W J	QRG019J-332
R1415	OM R 2.7KΩ1W J	QRG019J-272
R1421	OM R 12KΩ2W J	QRG026J-123Z
R1422	V R 10KΩ	QVZ3230-014
△FR1401	△F R 68Ω2W K	QRH024K-680M
△AR1503	△CMF R 11.8KΩ½W +1%	QRV142F-1182
R1504	V R 5KΩ	QVZ3230-053
R1509	OM R 10KΩ2W J	QRG026J-103Z
R1512	OM R 8.2KΩ2W J	QRG026J-822Z
R1514	OM R 820Ω2W J	QRG026J-821Z
R1515	CMF R 8.2Ω1W J	QRX019J-8R2
R1522	CMF R 4.7Ω1W J	QRX019J-4R7
R1523	OM R 68Ω2W J	QRG026J-680Z
R1528	OM R 390Ω1W J	QRG019J-391
R1534	ZN R	ERZ-C05ZK471
VR1501	ZN R	ERZ-C05DK271
△R1703	△CMF R 39Ω½W +1%	QRV122F-3902
△R1704	△CMF R 7.68KΩ½W +1%	QRV142F-7681
△R1901	△Posistor	A75414
R1902	UNF R 2Ω7W K	QRF076K-2R0
R1903	CMF R 4.7Ω3W J	QRX039J-4R7
R1904	OM R 10KΩ2W J	QRG026J-103Z
R1905	OM R 18KΩ1W J	QRG019J-183
△Q1908	△CMF R 47Ω½W +1%	QRV122F-470Z
△R1909	V R 2KΩ	QVP5A0B-023E
R1910	△CMF R 2.74KΩ¼W +1%	QRV142F-274I
△FR1901	△F R 220Ω½W K	QRH124K-221M

Capacitors	Description	Part Number
Symbol		
C1301	BPE Cap. 3.3uF 50V A	QEN61HA-335Z
C1402	Tan. Cap. 2.2uF 16V K	QEE51CK-225B
C1407	E Cap. 4.7uF 6.3V A	QEWS1JA-475
C1411	E Cap. 100uF 160V A	QEWS2CA-107
C1412	E Cap. 3.3uF 160V A	QEWS2CA-335
C1508	PP Cap. 5600uF 50V J	QFP31HJ-562
△C1512	△PP Cap. 2000pF DC1500V J	QFZ0082-202
△C1513	△PP Cap. 2000pF DC1500V J	QFZ0082-202
△C1514	△PP Cap. 2000pF DC1500V J	QFZ0082-202
C1515	PP Cap. 0.53uF DC1200V J	QFZ0067-534
C1520	BPE Cap. 3.3uF 50V A	QEN61HA-335Z
C1523	E Cap. 1uF 160V A	QEWS2CA-105Z
C1524	M Cap. 0.1uF 200V K	QFM720K-104M
△C1531	△PP Cap. 2000pF DC1500V J	QFZ0082-202
△C1532	△PP Cap. 1500pF DC1500V J	QFZ0082-152
C1904	E Cap.	QEY0034-001
C1905	E Cap. 10uF 250V A	QEWS2EA-106

<b>Colls</b>			
<b>Symbol</b>	<b>Description</b>		<b>Part Number</b>
L1502	Linearity Coil		A39835
L1503	Width Coil		C30380-A
L1504	Heater Choke		C30445-A
<b>Transformers</b>			
<b>Symbol</b>	<b>Description</b>		<b>Part Number</b>
T1501	Hor. Drive Transf.		A46022-BM
T1503	Side Pin Transf.		C39050-A
<b>Semiconductors</b>			
<b>Symbol</b>	<b>Description</b>		<b>Part Number</b>
IC1501	IC		HA11244
X1101	Si. Transistor		2SC1685(R)
X1102	Si. Transistor		2SA673(C)
X1103	Si. Transistor		2SC1685(R)
X1104	Si. Transistor		2SA673(C)
X1105	Si. Transistor		2SC1685(R)
X1106	Si. Transistor		2SA673(C)
X1301	Si. Transistor		2SC1685(R)
X1302	Si. Transistor		2SC1685(R)
X1303	Si. Transistor		2SA673(C)
X1304	Si. Transistor		2SC1685(R)
X1305	Si. Transistor		2SC1685(R)
X1401	Si. Transistor		2SD478
X1402	Si. Transistor		2SD478
X1501	Si. Transistor		2SC2610BK
X1901	Si. Transistor		2SC2688 (K.L.M.)
X1902	Si. Transistor		2SC1890A (E.F.)
D1101	Si. Diode		W06A
D1102	Si. Diode		W06A
D1103	Si. Diode		W06A
D1301	Si. Diode		1SZ473H
D1401	Si. Diode		1SZ473H
D1402	Zener Diode		RD10F(C)
D1503	Si. Diode		HF-1
D1504	Si. Diode		V09E
D1505	Zener Diode		RD11E(B)
D1506	Si. Diode		W06A
D1507	Si. Diode		1SS81
D1508	Si. Diode		1SZ473H
△D1701	△Zener Diode		RD20EV2
△D1901	△Si. Diode		1S1887A
△D1902	△Si. Diode		1S1887A
△D1903	△Si. Diode		1S1887A
△D1904	△Si. Diode		1S1887A
△D1905	△Zener Diode		RD6.8EV3
<b>Miscellaneous</b>			
<b>Symbol</b>	<b>Description</b>		<b>Part Number</b>
△F1901	△Fuse 1.25A		QMF53U1-1R25S
△F1902	△UL Fuse 3A		QMF66U1-3R0S

X103 and X105 VIDEO AMP. 2SC454C or 2SC1685  
X104 and X106 VIDEO AMP. 2SA673C



### Schematic Notes

Unless otherwise specified

Resistance: ( $\Omega$ ) ( $K \rightarrow K\Omega$ ,  $M \rightarrow M\Omega$ ), 1/4 (W) carbon resistor

Capacitance: 1 or higher  $\rightarrow$  (pF), less than 1  $\rightarrow$  ( $\mu$ F)

working voltage  $\rightarrow$  50 (V)  
ceramic capacitor

Inductance: ( $\mu$ H)

Electrolytic Cap: Capacitance Value ( $\mu$ F)/working voltage (V).  
NP  $\rightarrow$  non-polar (or bipolar) electrolytic cap.

Refer to the parts list for additional component information.

$\varnothing$  indicates test point connection

$\not\sim$  indicates chassis ground unless otherwise specified

Hz indicates cycles per second

For safety purposes (and continuing reliability)

$\Delta$  replace all components marked with safety symbol with identical type.

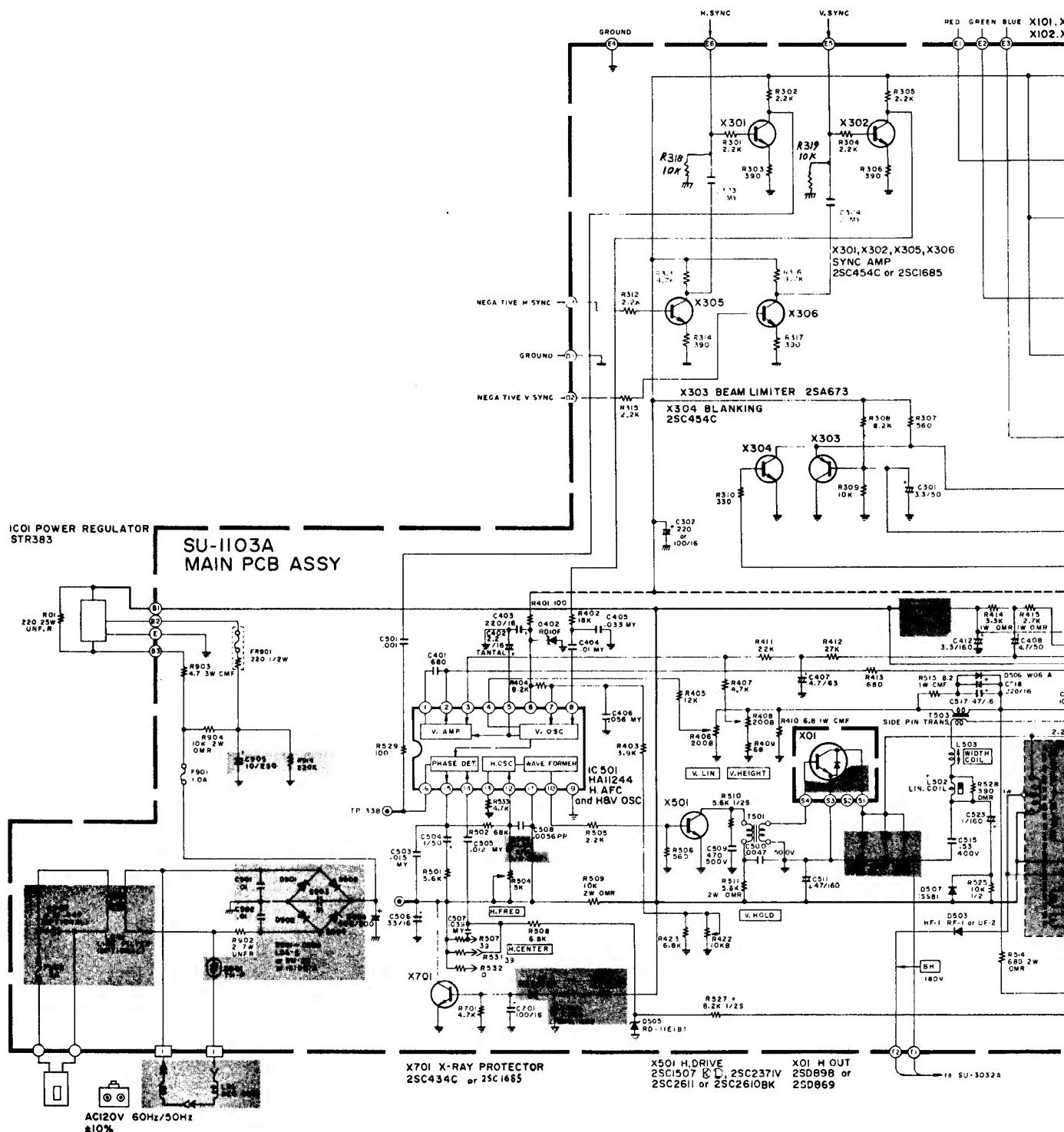
NOTE: FR  $\rightarrow$  fusible resistor (— $\triangle$ —)

Parts identification on circuit boards:

e.g. SU1126A (R107 = R1107)  
SU3030A (R113 = R3113)

G07-FBO

00-4147-03



## REPLACEMENT PARTS LIST - ELECTROHOME 13" MONITOR

Components identified by the  $\Delta$  symbol in the PARTS LIST and on the Schematic have special characteristics important to safety.

**DO NOT** degrade the safety of the set through improper servicing.

### Abbreviations for Resistors and Capacitors

#### Resistor

C R	: Carbon Resistor
Comp. R	: Composition Resistor
OM R	: Oxide Metal Film Resistor
V R	: Variable Resistor
MF R	: Metal Film Resistor
CMF R	: Coating Metal Film Resistor
UNF R	: Nonflammable Resistor
F R	: Fusible Resistor

#### Capacitor

C Cap.	: Ceramic Capacitor
M Cap	: Mylar Capacitor
E Cap.	: Electrolytic Capacitor
BP E Cap.	: Bi-Polar (or Non-Polar) Electrolytic Capacitor
MM Cap.	: Metalized Mylar Capacitor
PP Cap.	: Polypropylene Capacitor
MPP Cap.	: Metalized PP Capacitor
PS Cap	: Polystyrol Capacitor
Tan. Cap.	: Tantal Capacitor

**NOTE:** When ordering replacement parts please specify the part number as shown in this list including part name, and model number. Complete information will help expedite the order.

Use of substitute replacement parts which do not have the same safety characteristics as specified, may create shock, fire or other hazards. For maximum reliability and performance, all parts should be replaced by those having identical specifications.

Symbol	Description	Part Number
	Main P.C.B. Ass'y	SU-1103A
	CRT Socket P.C.B. Ass'y	SU-3016A
<b>Outside of the P.C.B. Ass'y</b>		
<b>Symbol</b>	<b>Description</b>	<b>Part Number</b>
$\Delta V01$	$\Delta$ Picture Tube	370ESB22(E)
$\Delta D Y01$	$\Delta$ Deflection Yoke	C29123-V
	PC Magnet	A76366-A
	Wedge	C30006
	$\Delta$ Flyback Transf.	A19183-A
	$\Delta$ Focus V R	A46606-A
	UNF Resistor 220 $\Omega$ , 25W. K	QRF258K-221
$\Delta R11$	$\Delta$ C Capacitor 150 pF, AC1.5KV	QCZ0101-005
$\Delta R05$	Si. Transistor	2SD869
$\Delta C04$	IC Regulator	STR383
X01	Degausing Coil	21-1007-31
IC01	Degausing Coil Pin Terminal (2)	34-708-01
L01	Degausing Coil Pin Terminal Housing	34-709-01
	Groundstrap Ass'y.	34-697-04
	Groundstrap Wire Terminal	34-228-03
	Groundstrap Spring (2)	35-3560-01
BR	Support Bracket RH	35-3919-01
BR	Support Bracket LH	35-3919-02
SC	SCREW 10-1/2 Pix Tube Mtg. (4)	31-631018-08
WA	Pyramidal Lockwasher (4)	33-255-01
	Clip P.C.B. Support (2)	33-629-02
	Ground Lug	34-33-04
CH	Chassis Base	38-452-01

## Main P.C.B. Ass'y (SU-1103A) Parts List

<b>Resistors</b>	<b>Symbol</b>	<b>Description</b>	<b>Part Number</b>
R1406	V	R 200Ω	QVZ3230-022
R1408	V	R 200Ω	QVZ3230-022
R1410	CMF	R 6.8Ω1W J	QRX019J-6R8
R1414	OM	R 3.3KΩ1W J	QRG019J-332
R1415	OM	R 2.7KΩ1W J	QRG019J-272
R1421	OM	R 12KΩ2W J	QRG029J-123
R1422	V	R 10KΩ	QVZ3224-014H
△FR1401	△F	R 68Ω2W K	QRH024K-680M
△R1503	△CMF	R 11.8KΩ½W +1%	QRV142F-1182
R1504	V	R 5KΩ	QVZ3230-053
R1509	OM	R 10KΩ2W J	QRG029J-103
R1511	OM	R 5.6KΩ2W J	QRG029J-562
R1514	OM	R 680Ω2W J	QRG029J-681
R1515	CMF	R 8.2Ω1W J	QRX019J-8R2
R1522	CMF	R 4.7Ω1W J	QRX019J-4R7
R1523	OM	R 56Ω2W J	ORG029J-560
R1528	OM	R 390Ω1W J	ORG019J-391
R1534	ZN	R	ERZ-C05ZK471
VR1501	ZN	R	ERZ-C05DK271
△R1703	△CMF	R 39KΩ½W +1%	QRV122F-3902
△R1704	△CMF	R 7.68KΩ¼W +1%	QRV142F-7681
△R1901	△Posistor		A75414
R1902	UNF	R 2Ω7W K	QRF076K-2R0
R1903	CMF	R 5.6Ω3W J	QRX039J-5R6
R1904	OM	R 10KΩ2W J	QRG026J-103Z
△FR1901	△F	R 220Ω½W K	QRH124K-221M
<b>Capacitors</b>	<b>Symbol</b>	<b>Description</b>	<b>Part Number</b>
C1402	Tan. Cap.	2.2uF 16V K	QEE51CK-225B
C1411	E	Cap. 100uF 160V A	QEWF52CA-107
C1412	E	Cap. 3.3uF 160V A	QEWF52CA-335
C1508	PP	Cap. 5600pF 50V J	QFP31HJ-562
C1511	E	Cap. 47uF 160V A	QEWF52CA-476S
△C1512	△PP	Cap. 2000pF DC1500V J	QFZ0082-202
△C1513	△PP	Cap. 2000pF DC1500V J	QFZ0082-202
△C1514	△PP	Cap. 2500pF DC1500V J	QFZ0082-252
C1515	PP	Cap. 0.53uF DC1200V K	QFZ0067-534
C1520	BPE	Cap. 1uF 50V A	QEN61HA-105Z
C1524	M	Cap. 0.1uF 200V K	QFM72DK-682M
C1904	E	Cap.	QEY0034-001
C1905	E	Cap. 10uF 250V A	QEWF52EA-106
△C1907	△MM	Cap. 0.1uF AC150V Z	QFZ9008-104
<b>Coils</b>	<b>Symbol</b>	<b>Description</b>	<b>Part Number</b>
L1501		Peaking Coil	A75360-6
L1502		Liniarty Coil	A39934
L1503		Width Coil	C30380-A
L1504		Heater Choke	C30333-A
L1901		Line Filter	A39475-J
<b>Transformers</b>	<b>Symbol</b>	<b>Description</b>	<b>Part Number</b>
T1501		Hor. Drive Transf.	A46022-BM
T1503		Side Pin Transf.	C39050-A

<b>Semiconductors</b>	<b>Description</b>	<b>Part Number</b>
<b>Symbol</b>	<b>I.C.</b>	<b>HA11244</b>
IC1501		
X1101	Si. Transistor	2SC1685(R)
X1102	Si. Transistor	2SA673(C)
X1103	Si. Transistor	2SC1685(R)
X1104	Si. Transistor	2SA673(C)
X1105	Si. Transistor	2SC1685(R)
X1106	Si. Transistor	2SA673(C)
X1301	Si. Transistor	2SC1685(R)
X1302	Si. Transistor	2SC1685(R)
X1303	Si. Transistor	2SA673(C)
X1304	Si. Transistor	2SC1685(R)
X1305	Si. Transistor	2SC1685(R)
X1401	Si. Transistor	2SD478
X1402	Si. Transistor	2SD478
X1501	Si. Transistor	2SC2610BK
X1701	Si. Transistor	2SC1685(P-S)
D1101	Si. Diode	W06A
D1102	Si. Diode	W06A
D1103	Si. Diode	W06A
D1301	Si. Diode	1S2473H
D1401	Si. Diode	1S2473H
D1402	Zener Diode	RD10F(C)
D1503	Si. Diode	HF-1
D1504	Si. Diode	V09E
D1505	Zener Diode	RD11E(B)
D1506	Si. Diode	W06A
D1507	Si. Diode	1SS81
D1508	Si. Diode	1S2473H
△D1701	△Zener Diode	RD20EV2
△D1901	△Si. Diode	1S1887A
△D1902	△Si. Diode	1S1887A
△D1903	△Si. Diode	1S1887A
△D1904	△Si. Diode	1S1887A

<b>Miscellaneous</b>	<b>Description</b>	<b>Part Number</b>
<b>Symbol</b>		
△F1901	△Fuse 1A	QMF53U1-1R0S
△F1902	△UL Fuse 3A	QMF66U1-3R0S

## CRT Socket P.C.B. Ass'y (SU-3016A) Parts List

### Resistors

Symbol	Description	Part Number
R3105	V R 200Ω	QVZ3234-022
R3106	V R 200Ω	QVZ3234-022
R3113	V R 5KΩ	QVZ3234-053
R3114	V R 5KΩ	QVZ3234-053
R3115	V R 5KΩ	QVZ3234-053
R3116	OM R 10KΩ2W J	QRG029J-103
R3117	OM R 10KΩ2W J	QRG029J-103
R3118	OM R 10KΩ2W J	QRG029J-103
R3119	Comp. R 3.3KΩ½W K	QRZ0039-332
R3120	Comp. R 3.3KΩ½W K	QRZ0039-332
R3121	Comp. R 3.3KΩ½W K	QRZ0039-332

### Capacitors

Symbol	Description	Part Number
C3107	E Cap. 10uF 250V A	QEWF52EA-106
C3108	C Cap. 1000pF DC1400V P	QCZ9001-102M

### Coils

Symbol	Description	Part Number
L3101	Peaking coil	QQL043K-101

### Semiconductors

Symbol	Description	Part Number
X3101	Si. Transistor	2SC2611
X3102	Si. Transistor	2SC2611
X3103	Si. Transistor	2SC2611

### Miscellaneous

Symbol	Description	Part Number
△	CRT Socket	A75522

# INSTALLATION AND SERVICE INSTRUCTIONS

## COLOR PURITY AND VERTICAL CENTERING ADJUSTMENT

For best results, it is recommended that the purity adjustment be made in the final monitor location. If the monitor will be moved, perform this adjustment with it facing west or east. The monitor must have been operating 15 minutes prior to this procedure and the faceplate of the CRT must be at room temperature.

The monitor is equipped with an automatic degaussing circuit. However, if the CRT shadow mask has become excessively magnetized, it may be necessary to degauss it with manual coil. Do not switch the coil OFF while the raster shows any effect from the coil.

Purity Magnets are used for Color Purity and V Centering Adjustment.

Purity Adjustment procedure is as follows.

1. Remove R-G-B signal from monitor.
  2. Turn Green Cut off Control (VR404) on the Neck Board fully CCW.  
Turn Red and Blue Cut off Control (VR405) fully CW.
  3. Pull the Deflection Yoke backward so that the Magenta belt will appear. (See Fig. 4)
  4. Move the two Purity Magnets and bring the Magenta belt to the mechanical center of the screen (See Fig. 5)
  - 5) The vertical center position should be set VRS to  $-5/64"$  ( $-2\text{ mm}$ ) as shown in Fig. 6.
- Insert service tip "N" on Neck circuit board to "S" on Vert./Horiz. circuit board (See Fig. 13). To check, use the Green raster at low intensity. Be sure to return the service tips to their original positions for the next check.
5. Push the Deflection Yoke forward gradually and fix it at the place where the Magenta screen becomes uniform throughout.
  6. Turn Cut off Control, and Drive Control and confirm that each color is uniform.
  7. If the color is not uniform, re-adjust it moving Purity Magnets slightly.
  8. Move a pair of Purity Magnets at the same time (do not change the angle of the pair), and adjust the vert. center to center of screen.
  9. Obtain the three colors and confirm whether white uniformity is balanced.
  10. Insert the temporary wedge as shown in Fig. 5 and adjust the angle of Deflection Yoke.

## STATIC CONVERGENCE ADJUSTMENT

A recently developed Deflection Yoke and Electron Guns construction has been used on this equipment in combination with In-Line Guns and Black Stripe Screen to make a barrel-type magnetic-field distribution for vertical deflection and a pin-cushion-type magnetic field for horizontal deflection with which a self-converging system can be obtained. This type is different from conventional unity-magnetic field distribution type deflection yoke. 4-Pole Magnets and 6-Pole Magnets are

employed for static convergence instead of a Convergence Yoke.

1. A cross hatch signal should be connected to the monitor.

2. A pair of 4-Pole Convergence Magnets are provided and adjusted to converge the blue and red beams. When the Pole opens to the left and right  $45^\circ$  symmetrically, the magnetic field maximizes. Red and blue beams move to the left and right oppositely (See Fig. 7-a and 7-b). Variation of the angle between the tabs adjusts the convergence of red and blue vertical lines.

When the both 4-Pole Convergence Magnet Tabs are rotated as a pair, the convergence of the red and blue horizontal lines is adjusted.

3. A pair of 6-Pole Convergence Magnets are also provided and adjusted to converge the magenta (red + blue) to green beams.

When the Pole opens to the left and right  $30^\circ$  symmetrically, the magnetic field is maximized. Red and blue beams both move to the left and right (See Fig. 8-c and 8-d).

Variation of the opening angle adjusts the convergence of magenta to green vertical lines. When both 6-Pole Convergence Magnet Tabs are rotated as a pair the convergence of magenta to green horizontal lines is adjusted.

## PRECISE ADJUSTMENT OF DYNAMIC CONVERGENCE (See Fig. 10 and 11)

1. Feed a cross hatch signal to the monitor.
  2. Insert the temporary wedge and fix Deflection Yoke so as to obtain the best circumference convergence (See Fig. 10 and 11).
- NOTE:  
The temporary wedges may need to be moved during adjustments.
4. Insert three rubber wedges to the position as shown in Fig. 9 to obtain the best circumference convergence.

NOTE:

- 1) Tilting the angle of the yoke up and down adjusts the crossover of both vertical and horizontal red and blue lines. See Fig. 10 (a) and (b).
- 2) Tilting the angle of the yoke sideways adjusts the parallel convergence of both horizontal and vertical lines at the edges of the screen. See Fig. 11-a and b.
- 3) Use three rubber wedges (thick and thin rubber wedges are used for a purpose).
- 4) The angle of each rubber wedges are shown in Fig. 9.
- 5) After three rubber wedges have been inserted, pull out the temporary wedge.
- 6) Fix the rubber wedges with chloroprene rubber adhesive.

# INSTALLATION AND SERVICE INSTRUCTIONS

## BLACK AND WHITE TRACKING (With R/G.B. Inputs grounded)

- Set Black Level Control (VR201) to mid point.
- Set Red and Blue Drive Controls (VR401 & VR402) to their mechanical center.
- Set the G2 Screen Control (VR406) and the 3 Cut-off Controls (VR403, VR404, & VR405) to minimum

(CCW).

- Slowly turn up G2 screen control until the first faint color appears.
- Slowly turn up the other two color cut-off controls in turn to match the first.
- Remove ground from R/G/B/ inputs. Adjust Red and Blue Drive Controls (VR401 & VR402) for white screen.

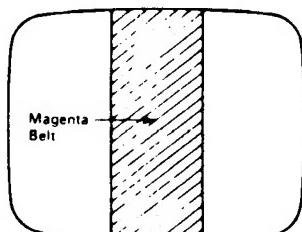


FIGURE 4

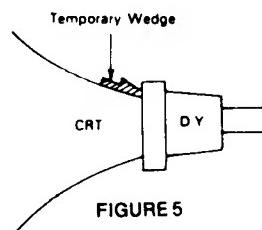


FIGURE 5

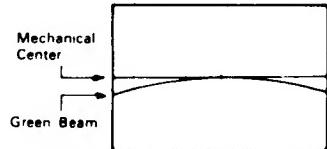
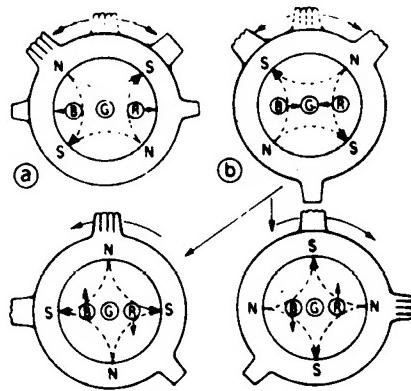
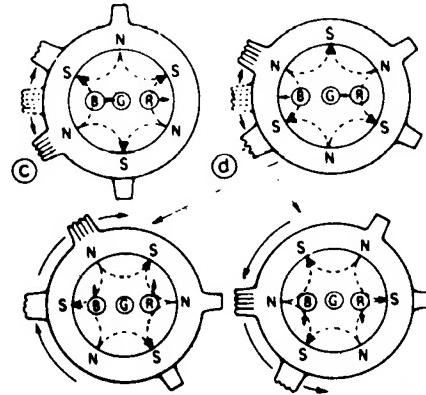


FIGURE 6



4-Pole Magnets and the Movement of Beams

FIGURE 7



6-Pole Magnets and the Movement of Beams

FIGURE 8

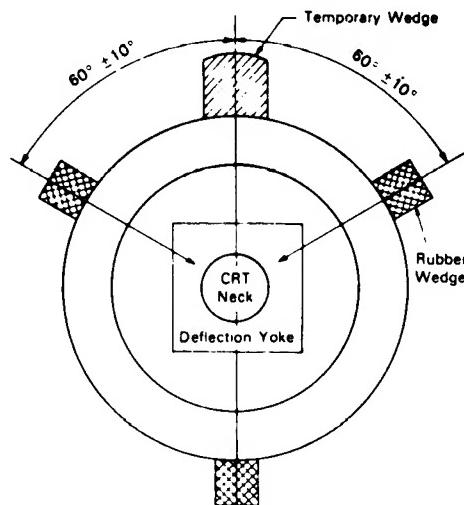
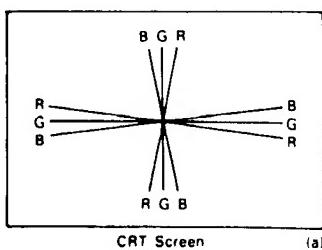
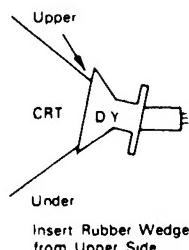


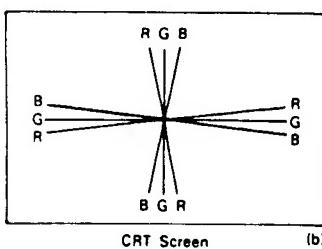
FIGURE 9



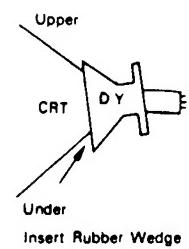
CRT Screen (a)



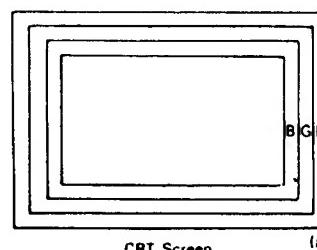
Insert Rubber Wedge from Upper Side



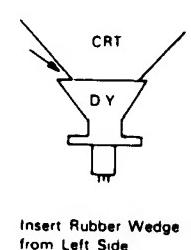
CRT Screen (b)



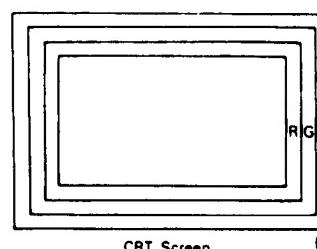
Insert Rubber Wedge from Lower Side



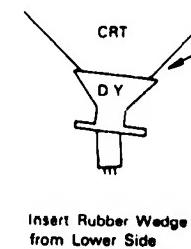
CRT Screen (a)



Insert Rubber Wedge from Left Side



CRT Screen (b)



Insert Rubber Wedge from Lower Side

# MONITOR - GENERAL INSTRUCTIONS

## Service Set-Up Procedure

**NOTE:** All monitors are equipped with automatic degaussing coils which effectively demagnetize the picture tube each time the monitor is turned on. The degaussing coils will operate any time the set is turned on after having been off for at least five minutes.

The degaussing effect is confined to the picture tube since the coils are mounted on the ferrous tube shield. Should any part of the chassis or cabinet become magnetized, it will be necessary to degauss the affected area by means of a manual degaussing coil. Move the coil slowly around the CRT face area, then slowly withdraw for a distance of six feet before disconnecting the coil from the AC power supply.

Normally little, if any adjustment should be necessary. However, when a picture tube, yoke or similar component is replaced, preliminary static convergence should be done before attempting purity adjustment, and so on.

Set up should be done in a north/south direction. Horizontal and vertical centering taps should be set to the centre position if a major component has been changed.

### 1.0 Purity

- 1.1 Loosen yoke retaining clamp (figure 2), remove adhesive material fixing wedges to CRT. Remove wedges completely and clean off dried adhesive from picture tube and wedges.
- 1.2 A small quantity of "nail polish" has been used to lock the purity convergence rings in place. This seal must be broken with a sharp tipped instrument before any adjustments are attempted. Some models also use a locking ring at either end of the purity and convergence rings. This must be loosened before adjustments are made. It goes without saying that upon completion of all adjustments, the lock must be reset and/or a dab of paint or nail polish must be re-applied to edge of rings to prevent movement.
- 1.3 Connect an appropriate signal source, eg: Electrohome RGB generator producing a white field plus individual red, green and blue fields.
- 1.4 Bring the long and short purity tab protrusions in line with each other to obtain near-zero magnetic field (figure 4) (In some cases bring the flat and indented tabs together to obtain zero field). Protrusions can then be vertical, horizontal or at any convenient angle to start.
- 1.5 Turn off the green and blue fields and adjust setup controls to produce a red field. (See fig. 3)
- 1.6 Pull the deflection yoke back so that a red band appears in the centre of the screen.
- 1.7 Spread the tabs apart as little as necessary and rotate both rings together to center the red band horizontally on the face of the CRT (approximate). (See Fig. 5)
- 1.8 Slide the yoke towards the bell of the picture tube slowly to obtain a uniform red field (pure in color) across the entire tube face. Juggle back and forth slightly as necessary. Lightly tighten yoke retaining clamp.
- 1.9 Momentarily switch on a cross-hatch signal and rotate yoke to level the pattern on the face of CRT.
- 1.10 Return generator to regain red raster.
- 1.11 Turn off red field and check for pure field for each of the green and blue fields. Reposition yoke if necessary to obtain optimum purity on all fields.
- 1.12 Tighten yoke retaining clamp to prevent yoke shift or rotation. (Do not install wedges at this time.)

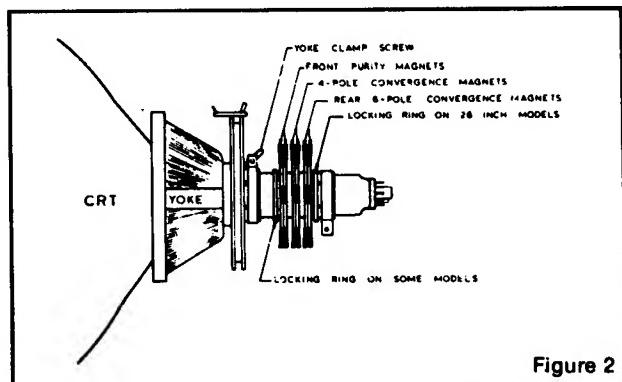


Figure 2

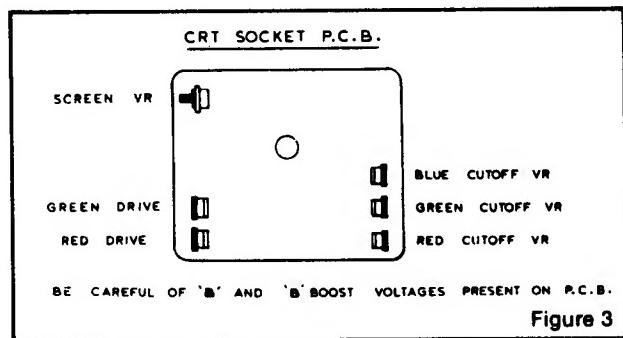


Figure 3

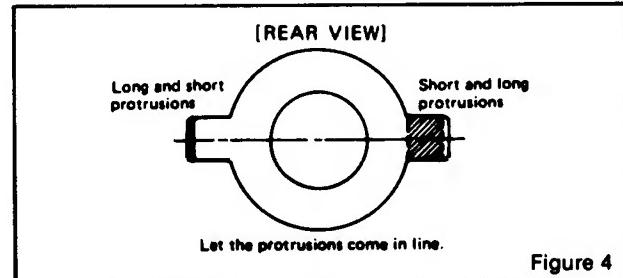


Figure 4

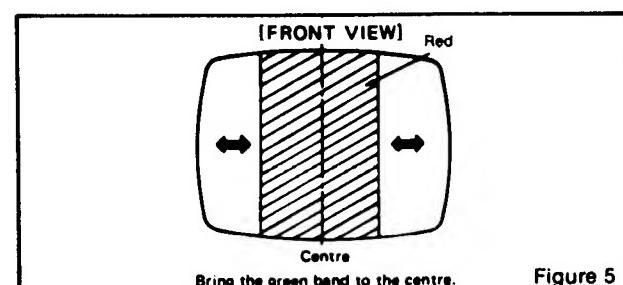


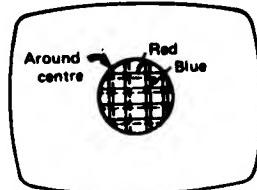
Figure 5

## 2.0 Static and Dynamic Convergence

NOTE: Static convergence is achieved by four magnets located on the neck, nearest the base of the picture tube, Fig. 2. The middle pair of magnetic rings are adjusted to converge the blue and red crosshatch lines. The rear pair of convergence rings (closest to the base of the picture tube) are adjusted to converge the magenta (blue/red) to the green crosshatch lines. Dynamic convergence is achieved by tilting the deflection yoke up-down and left-right.

- 2.1 Ensure that the controls misadjusted during purity setup (screen, cut-off, etc.) are set to give white balance. See 3.0 below.
- 2.2 Switch generator to the crosshatch pattern.
- 2.3 Adjust convergence around the edges of the picture tube by tilting the yoke up-down and left-right, and temporarily install one wedge at the top of the yoke or in a more optimum position. (Figures 8, 9, 10)
- 2.4 Turn off green input and turn on the red and blue input.
- 2.5 Rotate the 4-pole (middle) pair of magnets as a unit to minimize separation of the red and blue crosshatch lines around the center of the screen (Figure 6). Variation of the angle between the tabs adjusts convergence of red and blue. (Tilt yoke as required to converge red and blue at the edges as in 2.3 above.)
- 2.6 Turn on green input to obtain magenta (red/blue) and green crosshatch lines. Rotate the 6-pole (rear) pair of magnets as a unit to minimize separation of the magenta and green lines (figure 7). Vary angle between the two tabs and further rotate as a unit to finalize.
- 2.7 When convergence of 3 colors is optimized (static in center and dynamic around edges) apply stripe of paint or nail polish to convergence magnet rings to prevent movement. If applicable, tighten locking ring carefully.
- 2.8 Remove temporary wedge from yoke. Tilt yoke in up-down and left-right direction for best circumference convergence and install 3 wedges. (It is best to use 3 new wedges since they have adhesive backing. Simply pull off tape, slide wedge in place and press outer flap down firmly. For more permanency apply small quantity of silastic or similar material at junction of wedges and picture tube. Do not disturb while material is setting. (Order wedges by part number 39-1233-01).
- 3.0 White Balance (Grey Scale Tracking)  
Refer to figure 3. Do the following in subdued light:
- 3.1 Note this adjustment can be accomplished with no signal connected; eg: input connector open or if a signal generator is connected, switch off all 3 inputs at the generator.
- 3.2 Set red and green drive controls to their mechanical center and turn the common G2 screen control and 3 cut-off controls to minimum (fully counterclockwise).
- 3.3 Slowly turn up G2 screen control until the first faint color appears, then back off to edge of visibility. Do not touch the associated cut-off control - it should stay fully CCW for the remaining set-up.
- 3.4 Slowly turn up the other two color cut-off controls in turn to match the first. This should result in the faintest grey.
- 3.5 Turn on the signal generator with all 3 inputs on. (a crosshatch pattern would be appropriate).

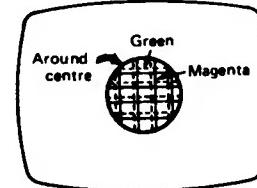
[FRONT VIEW]



Let the red and blue lines come in line by turning two 4-pole magnets.

Figure 6

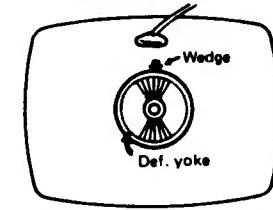
[FRONT VIEW]



Let the green and magenta lines come in line by turning two 6-pole magnets.

Figure 7

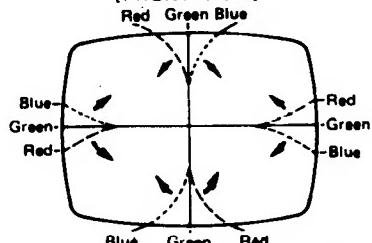
[REAR VIEW]



Roughly adjust the circumferential convergence and install one wedge temporarily.

Figure 8

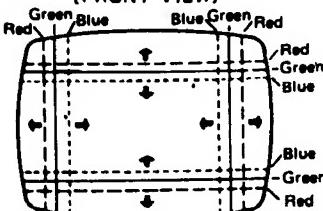
[FRONT VIEW]



Tilting the yoke upward will move the lines as shown with the arrows.

Figure 9

[FRONT VIEW]



Tilting the yoke to the right will move the lines as shown with the arrows.

Figure 10

- 3.6** Adjust the red and green drive controls for "neutral white" on high white picture areas. Generally these controls will be left at mech. centre.
- 3.7** Note: When monitor is re-connected with the game the screen control (G2) may require a slight adjustment to obtain proper black level. (the black portion of picture just extinguished).

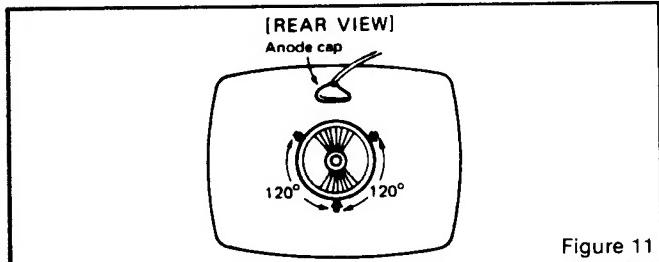


Figure 11

#### 4.0 Power Supply

The regulated +B1 control (R909) has been factory adjusted and normally requires no adjustment. However, if any repairs have been made to the chassis it is recommended that this adjustment should be made.

- Allow 5 minutes to warm up.
- No signal applied.
- Connect an accurate D.C. voltmeter to TP-91 or the emitter of X04 power regulator transistor.
- Adjust R909 for 120V. (See fig. 1)

Note:

Should +B1 control be set too high, it may cause possible component damage. Use an accurate D.C. voltmeter to set B1 (B+).

#### 5.0 Focus

Adjust focus control for best overall definition and picture detail an average signal applied. (Highlights should be favoured.)

#### 6.0 Color Service Generator for G07 Monitor

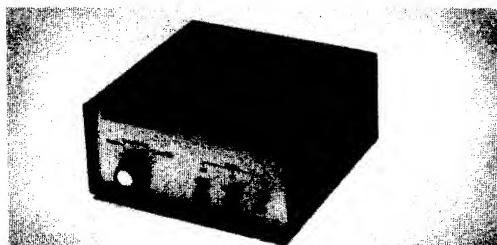
Electrohome has developed a color service generator that is specifically designed for use with the G07 color data monitor. It provides the monitor with both horizontal and vertical sync, as well as the following test patterns:

- Fine cross-hatch pattern
- Broad bar cross-hatch pattern
- Complete field

Three color selection switches, red, green and blue, provide the ability to display the above patterns in the three primary colors as well as the three secondary colors.

This product may be ordered from:

Contracts Marketing  
ELECTROHOME Electronics  
809 Wellington St. North  
Kitchener, Ontario  
Canada N2G 4J6  
Telephone: (519) 744-7111, Ext. 567



#### 7.0 X-Ray Emission Check

- Assure the power supply B1 is properly adjusted to 120V DC. See Item 4.0 (page 8)
- Assure that the anode voltage does not exceed max. as per Item 2.0 page 4.
- Assure that the high voltage hold down circuit is operating correctly. Use the following procedure.
  - Increase the B1 greater than 138.5V by shorting collector/emitter of the power regulator, X04.
  - Observe that the anode voltage (EHT) goes to 0. If the EHT does not go to 0, a fault must be located and repaired.
  - Remove short and set should return to normal operation. (Note, after the short is removed some monitors may not restart. In this case, remove power from monitor momentarily and normal operation will be restored.

Note:

The protector circuit consists of the components shown below in Fig. 13 with a circuit description.

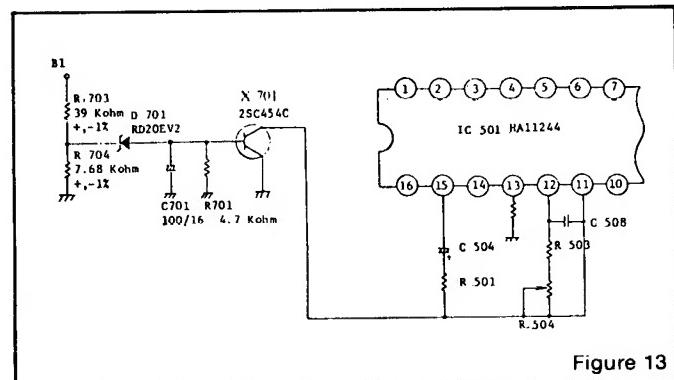


Figure 13

#### 8.0 Circuit Diagram and Description of High Voltage Hold Down or Safety Circuit

##### 8.1 Circuit Diagram of High Voltage Hold Down Circuit.

##### 8.2 Operation of High Voltage Hold Down Circuit.

The high voltage hold-down circuit protects the high voltage circuit from dangerous voltage with short circuiting between emitter and collector of power regulating transistor.

The base voltage of X701 is increased when the B1 voltage is increased more than 138.5 V DC.

When the base of X701 is increased, a short is produced by X701 between pin 11 and ground of IC 501, shutting down the horizontal osc. and high voltage.

**GORF GAME BOARD****GORF ROM/RAM BOARD****PC A084-90708-A873**

CHIP NUMBER	FUNCTION
74LS04	Hex Inverter
74LS30	8 input Nand
74LS74	Dual "D" Flip-Flop
74LS86	Quad 2 input exclusive or
74LS153	Dual 4 to 1 line multiplexer
74LS161	4 bit binary counter
74LS164	8 bit shift register
74LS174	Hex "D" Flip-Flop
74LS257	Quad 2 to 1 line multiplexer - tri-state
74LS367	Hex bus driver - tri-state
0066-117XX (2720)	Custom I/O chip
MC14066	Quad bilateral switch - Cmos
MC14099	8 bit addressable latch - Cmos
MC14539	Dual 4 to 1 line multiplexer - Cmos
SC01	Voice sound generator
Additional Devices	
2N4401	NPN transistor
2N4403	PNP transistor
2N6427	NPN transistor
L1, L2, L3	10 uH choke

**RGB INTERFACE****PC A082-91363-A000**

TBA530	Op-Amp
Additional Devices	
2N4401	NPN transistor

**CONTROL GRIP ASSEMBLY****A082-91379-A000**

LM339	Voltage comparator
Additional Devices	
Spx11879-11	Sensor

**PC A082-91364-A000**

CHIP NUMBER	FUNCTION
74LS02	Quad 2 input Nor
74LS08	Quad 2 input And
74LS30	8 input Nand
74LS32	Quad 2 input Or
74LS74	Dual "D" Flip-Flop
74LS133	13 input Nand
74LS138	3 to 8 line decoder / multiplexer
74LS244	Octal buffer
MC14078	8 input Nor - Cmos
2114	1K x 4 - Ram
9332	4K x 8 - Rom

**CPU BOARD****PC A082-91354-C000**

74LS00	Quad 2 input Nand
74LS02	Quad 2 input Nor
74LS04	Hex inverter
74LS08	Quad 2 input And
74LS10	Triple 3 input Nand
74LS20	Dual 4 input Nand
74LS74	Dual "D" Flip-Flop
74LS157	Quad 2 input multiplexer
74LS174	Hex "D" Flip-Flop
74LS175	Quad "D" Flip-Flop
Z80	CPU
2719-(0066-115)	Address custom chip
2721-(0066-116)	Data custom chip
74LS245	Octal bus transceiver
74LS257	Quad 2 input multiplexer
74LS74	Dual "D" Flip-Flop
7416	Hex buffer
MC14024	7 stage ripple counter
Additional Devices	
2N4401	NPN transistor
T1S-137	PNP transistor
IN4004	Diode
IN4148	Diode
14.31818	Crystal

**PATTERN BOARD**  
**PC A082-91355-C000**

CHIP NUMBER	FUNCTION
74LS00	Quad 2 input Nand
74LS04	Hex inverter
74LS74	Dual "D" Flip-Flop
74LS157	Quad 2 input multiplexer
74LS161	4 bit binary counter
74LS175	Quad "D" Flip-Flop
74LS257	Quad 2 input multiplexer
74LS367	Hex bus driver
CD4555	Dual binary 1 or 4 decoder
MC14008	4 bit full adder
MC14013	Dual "D" Flip-Flop
MC14068	8 input Nand
MC14174	Hex "D" Flip-Flop
MC14175	Quad "D" Flip-Flop
MC14516	Binary up/down counter
MC14539	Dual 4 input multiplexer
MC14572	Multiple gate package

**RAM BOARD**  
**PC 082-91356-C000**

74LS08	Quad 2 input And
74LS14	Hex schmitt trigger
74LS166	Parallel to serial shift register
74LS253	Dual 4 input multiplexer
MK4027 (MK4015)	RAM

**AUDIO AMPLIFIER BOARD**  
**PC A082-90903-A000**

2N4403	PNP transistor
TIP 31	NPN transistor
IN4004	Diode

**POWER SUPPLY**  
**PC A082-90411-A000**

LM317	Voltage regulator
LM339	Quad voltage comparator
SG3532	General purpose regulator
Additional Devices	
79M05	Negative five voltage regulator
IN3235	Zener diode
2N3055	NPN transistor

NOTE: When an IC is a LS, it should be replaced  
by a LS device (low shchottky).

## STRAPPING CHART

### ROM / RAM BOARD

#### DOMESTIC FOR ROMS

	1	2	3	4	5	6	7	8	9
X-31	CLOSED	OPEN	OPEN	OPEN	CLOSED	OPEN	CLOSED	CLOSED	OPEN
X-32									
X-33	CLOSED	OPEN	CLOSED	OPEN	OPEN	CLOSED	CLOSED	OPEN	

#### DOMESTIC FOR PROMS

	1	2	3	4	5	6	7	8	9
X-31	CLOSED	OPEN	CLOSED	OPEN	OPEN	OPEN	CLOSED	CLOSED	OPEN
X-32									
X-33	CLOSED	OPEN	CLOSED	OPEN	OPEN	CLOSED	CLOSED	OPEN	

#### FOREIGN ROMS

	1	2	3	4	5	6	7	8	9
X-31	CLOSED	OPEN	CLOSED	OPEN	OPEN	CLOSED	OPEN	CLOSED	OPEN
X-32	CLOSED	OPEN	OPEN	OPEN	CLOSED	CLOSED	OPEN	CLOSED	OPEN
X-33	CLOSED	OPEN	CLOSED	OPEN	OPEN	CLOSED	CLOSED	OPEN	

#### RAM/ROM BOARD

CUT	JUMPER	JU 20	FOR	74LS241	LOCATION	U15
* CUT	JUMPER	JU 21	FOR	74LS244	LOCATION	U15
CUT	JUMPER	JU 22	FOR	74LS32	LOCATIONS	U2, U3, U4, U5
* CUT	JUMPER	JU 23	FOR	74LS08	LOCATIONS	U2, U3, U4, U5

#### GORF GAME BOARD

CUT	JUMPER	JU 2	FOR	VOCAL SOUND
	JUMPER	JU 1	IN	COCKTAIL
	JUMPER	JU 1	OUT	FOR UPRIGHT